



## STATION LOCATION ANALYSIS

### SAINT PETER FIRE DEPARTMENT Saint Peter, Minnesota

March 20, 2017



ARCHITECTURAL DESIGN FOR PUBLIC SAFETY



## INTRODUCTION

The Saint Peter Volunteer Fire Department was formed in 1869. Most recently they have been serving the community of Saint Peter and surrounding townships from a single station located at 227 West Mulberry Street in Saint Peter. The current station is quite old having served as a City garage prior to being dedicated to the fire department's use. It was constructed in 1928 and is well beyond its expected life.

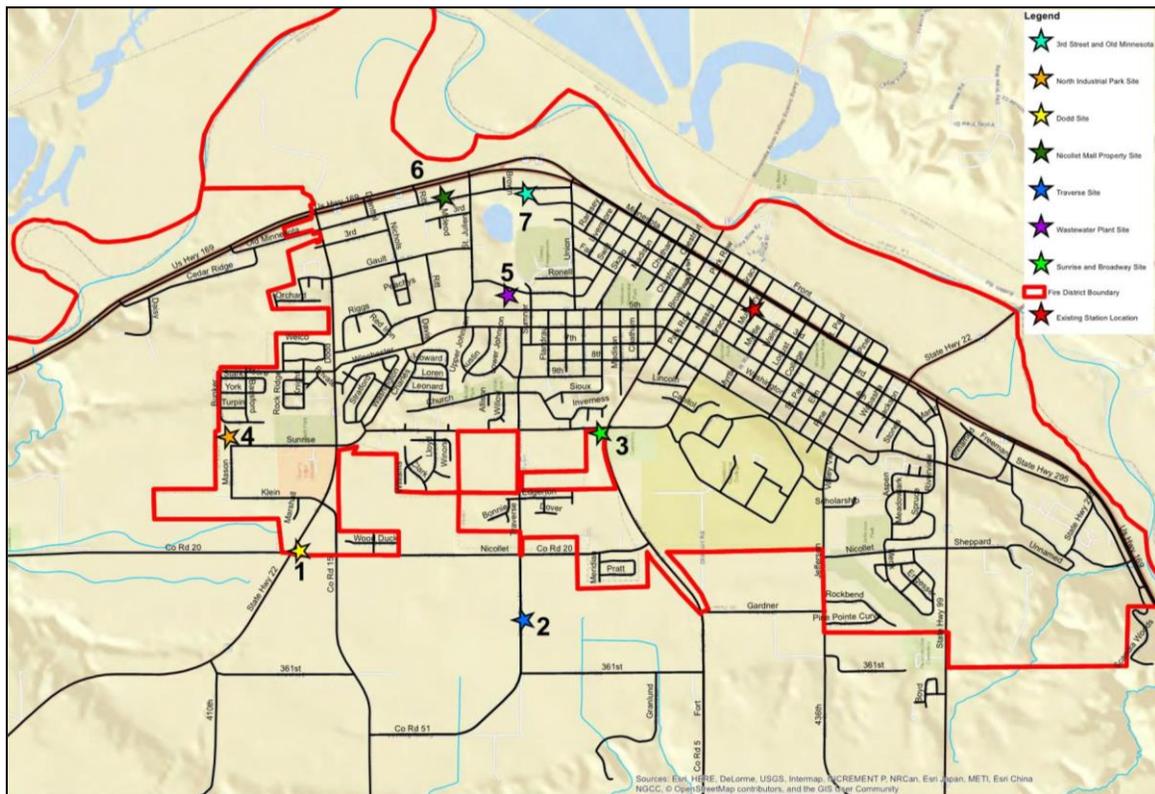
Interviews with the City Administration, Fire Chief and the fire staff have developed the following basic pieces of information as direction for the study.

- The existing station is old and too small for the current operation. It is scheduled for replacement in the coming years.
- This study is the first step in replacing the station and includes determining the best location in the City for a new station.

## STATION LOCATION

A station location study answers two essential questions related to the location of a fire station facility; what site will provide optimal emergency response and is that site well suited for the facility?

In the case of the Saint Peter Fire Station Location Study, our firm worked with department staff and the City to develop a list of potential sites within the department's response area that appeared to be adequate for the facility as a starting point for our exploration.



Sites Considered – Reference Figure 25, Appendix A

Saint Peter Fire Department  
Saint Peter, Minnesota  
Station Location and Space Needs Report

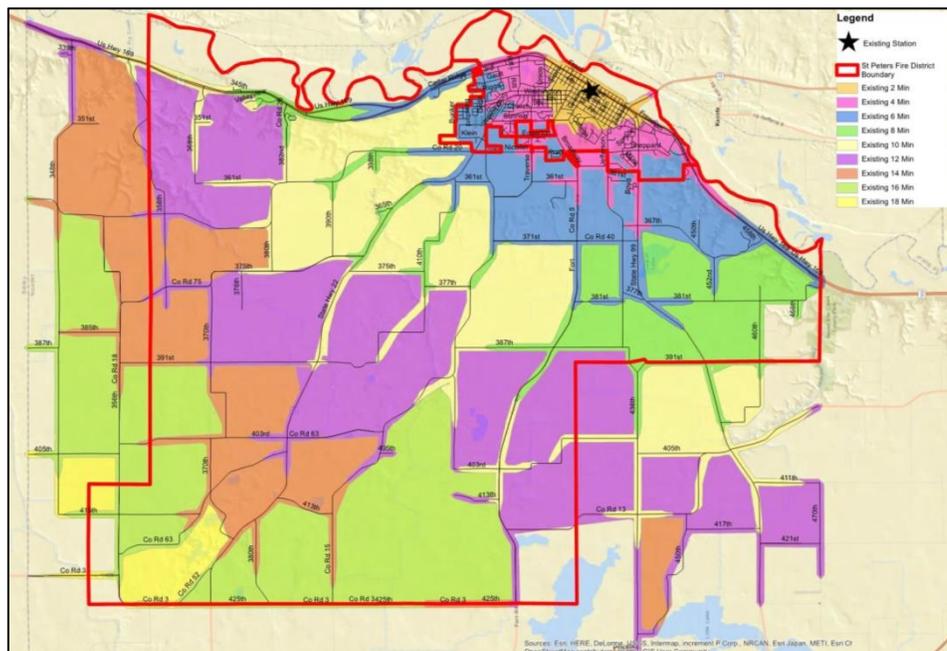
These sites are located on the above map and identified as follows:

1. Dodd
2. Outer Traverse
3. Sunrise and Broadway
4. North Industrial Park
5. Wastewater Plant
6. Nicollet Mall Property (North of Holiday)
7. Third and Old Minnesota

These above sites are listed in order of most viable for total response time (response to the station by Paid-on-Call staff as well as response to the community as determined by the GIS mapping). Response time mapping for all sites is included in Appendix A.

GIS mapping was created for the existing station location (fig. 10) representing the projected emergency response time superimposed on the department's response area and showing two minute incremental response zones. The Saint Peter Fire Department is capable of responding to the calls within the City within a recommended eight minute response time\* from its existing station.

\*Eight minute response zones are used for this analysis as an approximation of NFPA 1720 guidelines which specifies required response from Paid-On-Call Departments. When added to a six minute or less response to the station, which the Saint Peter Fire Department requires of all responders, the total response will be less than the 14 minutes required for rural population centers similar to neighborhoods that make up the edges of the City Saint Peter response zone. It should be noted that this analysis is not intended to prove that the department meets NFPA 1720, but to recommend optimal response characteristics to the City.



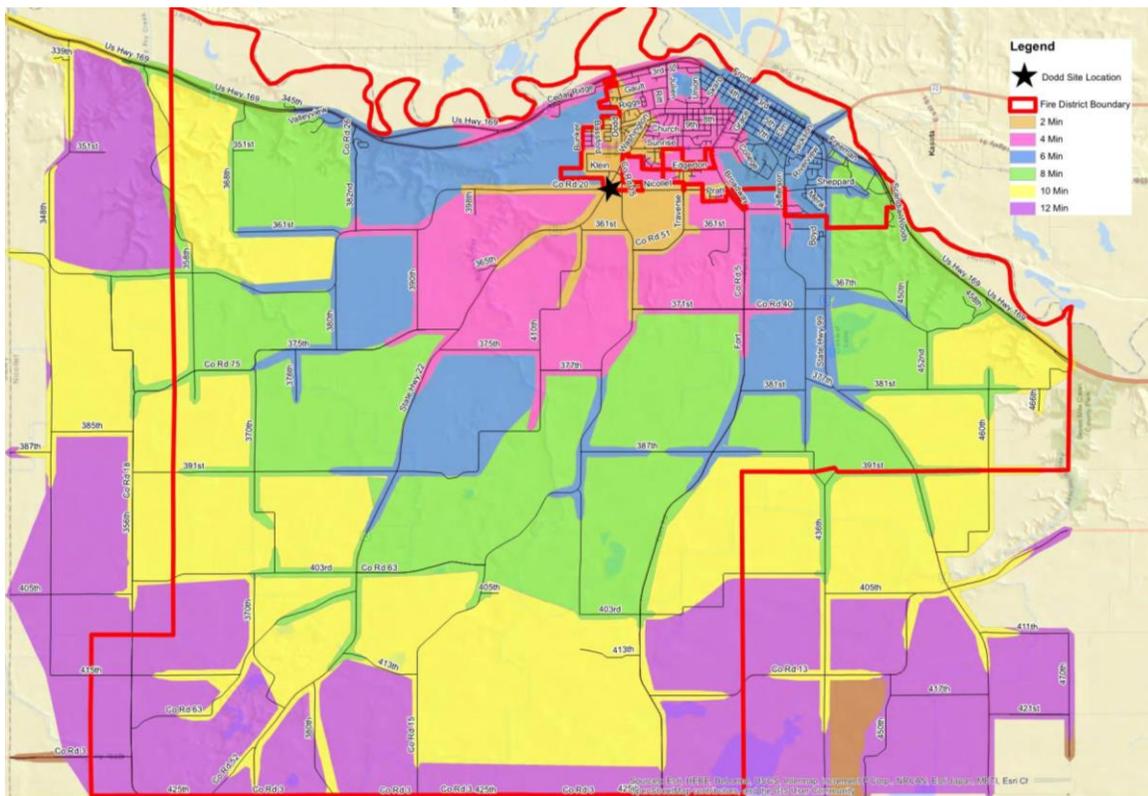
Existing Response Time – Reference Figure 10, Appendix A

Saint Peter Fire Department  
Saint Peter, Minnesota  
Station Location and Space Needs Report

It should be noted that the department fails to achieve the eight minute response to areas of the surrounding townships they serve which is not an uncommon occurrence.

Additional GIS mapping for each of the potential sites identified was then created with the purposes of evaluating each site as well as to compare to the existing service parameters. The results of all the mapping, including response times to each station by Paid-On-Call staff and percentage of calls achieved in recommended times is included in Appendix A of the Report.

An optimal location was also calculated with the GIS mapping software. This calculation determines a potential location based solely on balancing the response time to the entire service area. The Optimal location was determined to be substantially the same as the Dodd site (figure 25, Appendix A).



Optimal Response Time – Reference Figure 13-Dodd Location, Appendix A

In general, the GIS mapping indicates that sites located closer to the Dodd site have a better response to the entire service area due to the proximity to major traffic arteries. It should be noted that the differences between any of the top four sites (Dodd, Outer Traverse, Sunrise and Broadway, and North Industrial Park) provide substantially similar response characteristics; the City would be well served using any of the four.

**A Site of approximately 5 acres will be required for this facility.**

## SUMMARY AND RECOMMENDATIONS

The team respectfully submits the following recommendations for the City’s consideration:

1. Obtain a site of approximately five acres at any of the four sites (Dodd, Outer Travers, Sunrise and Broadway, and Business Park) identified in the Station Location section of the report.
2. Complete the Space Needs Analysis.

## NEXT STEP:

Due diligence should be done on any property considered for purchase to include a phase one environmental study, soil borings, topographic survey and a concept design phase to ensure building fit.

The following project schedule is offered to the City for consideration in planning the timing of this project.

### PROJECT SCHEDULE

TASKS	2017												2018					2019					
	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May	Through	May				
Pre-Design																							
Station Location																							
Space Needs																							
Site Acquisition/Funding																							
Schematic Design																							
Design Development																							
Construction Documents																							
Bidding																							
Construction																							

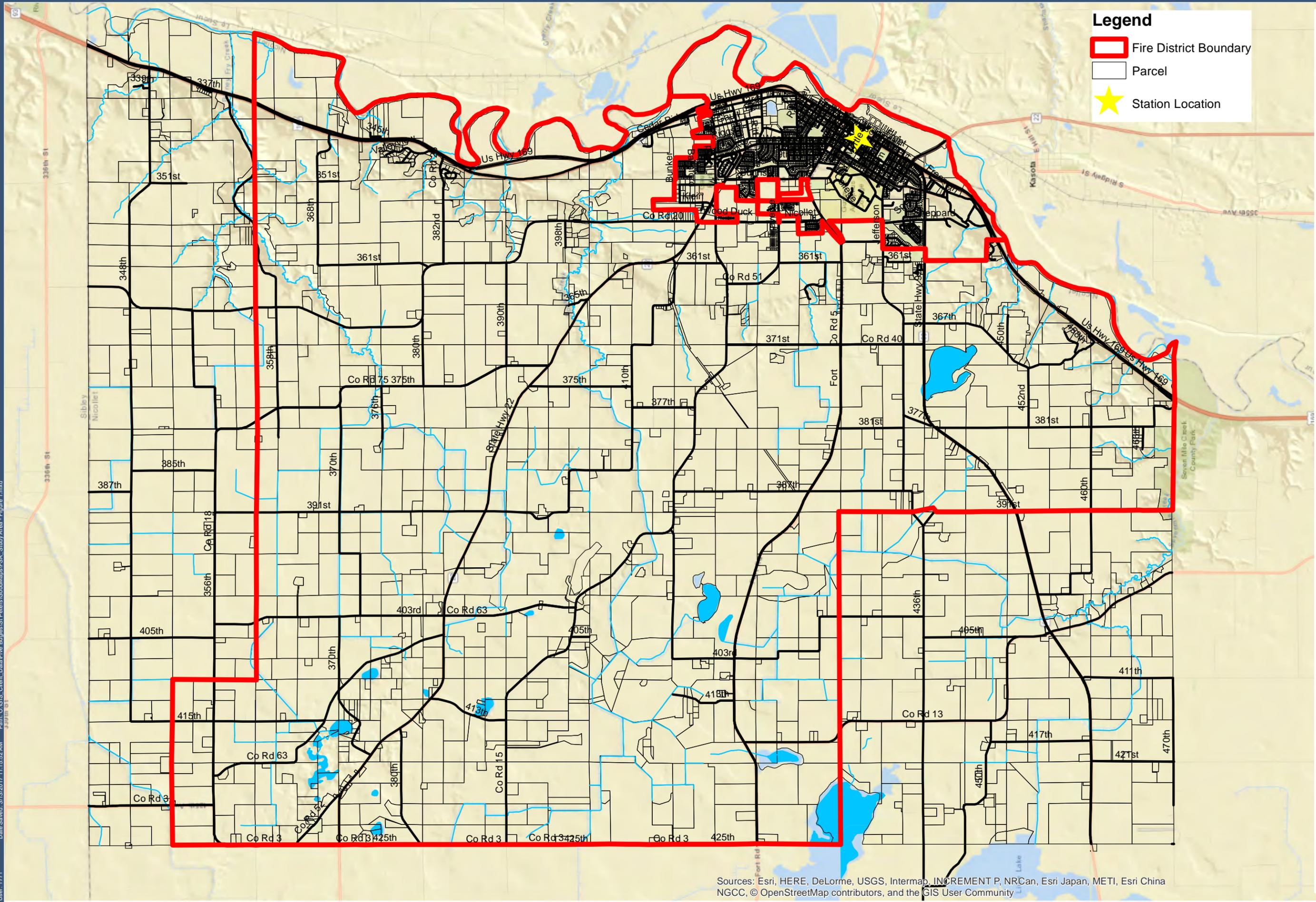
Saint Peter Fire Department  
Saint Peter, Minnesota  
Station Location and Space Needs Report

# **APPENDIX A**

## **STATION LOCATION ANALYSIS**



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**Legend**

- Fire District Boundary
- Parcel
- Station Location

**FIGURE # 1**

**GRAEF**

**FIRE STATION RESPONSE STUDY AREA**  
**FIRE STATION LOCATION STUDY**  
**CITY OF ST PETER**  
**NICOLET COUNTY, MINNESOTA**

0 1,250 2,500 5,000  
Feet

1 in = 5,500 ft

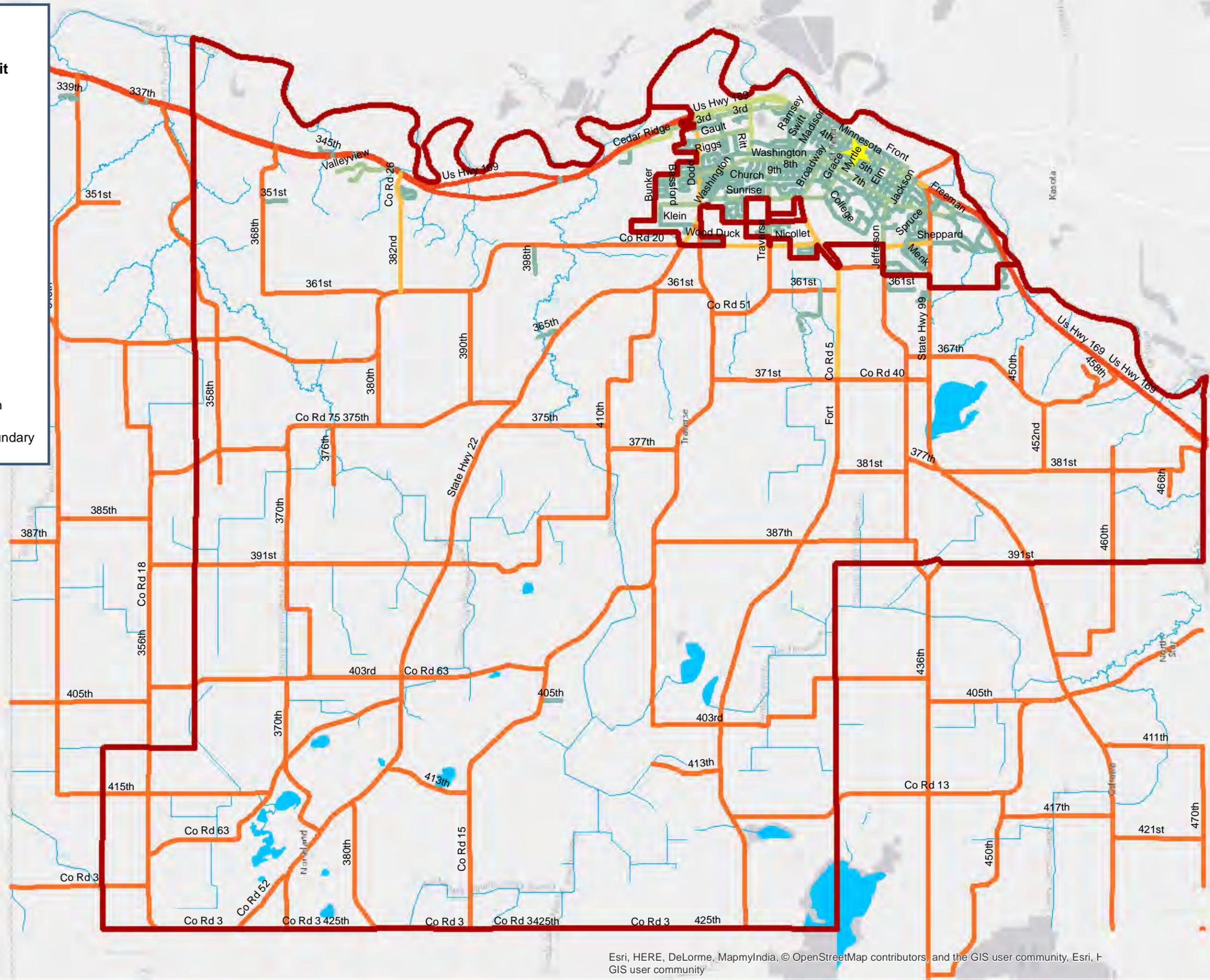
Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China NGCC, © OpenStreetMap contributors, and the GIS User Community



Legend

Roads by Speed Limit

- 10
- 15
- 25
- 30
- 35
- 36
- 40
- 45
- 50
- 55
- 65
- ★ Station Location
- Fire District Boundary



**ROAD SPEED LIMIT MAP**  
**FIRE STATION LOCATION STUDY**  
 CITY OF ST PETER  
 NICOLET COUNTY, MINNESOTA



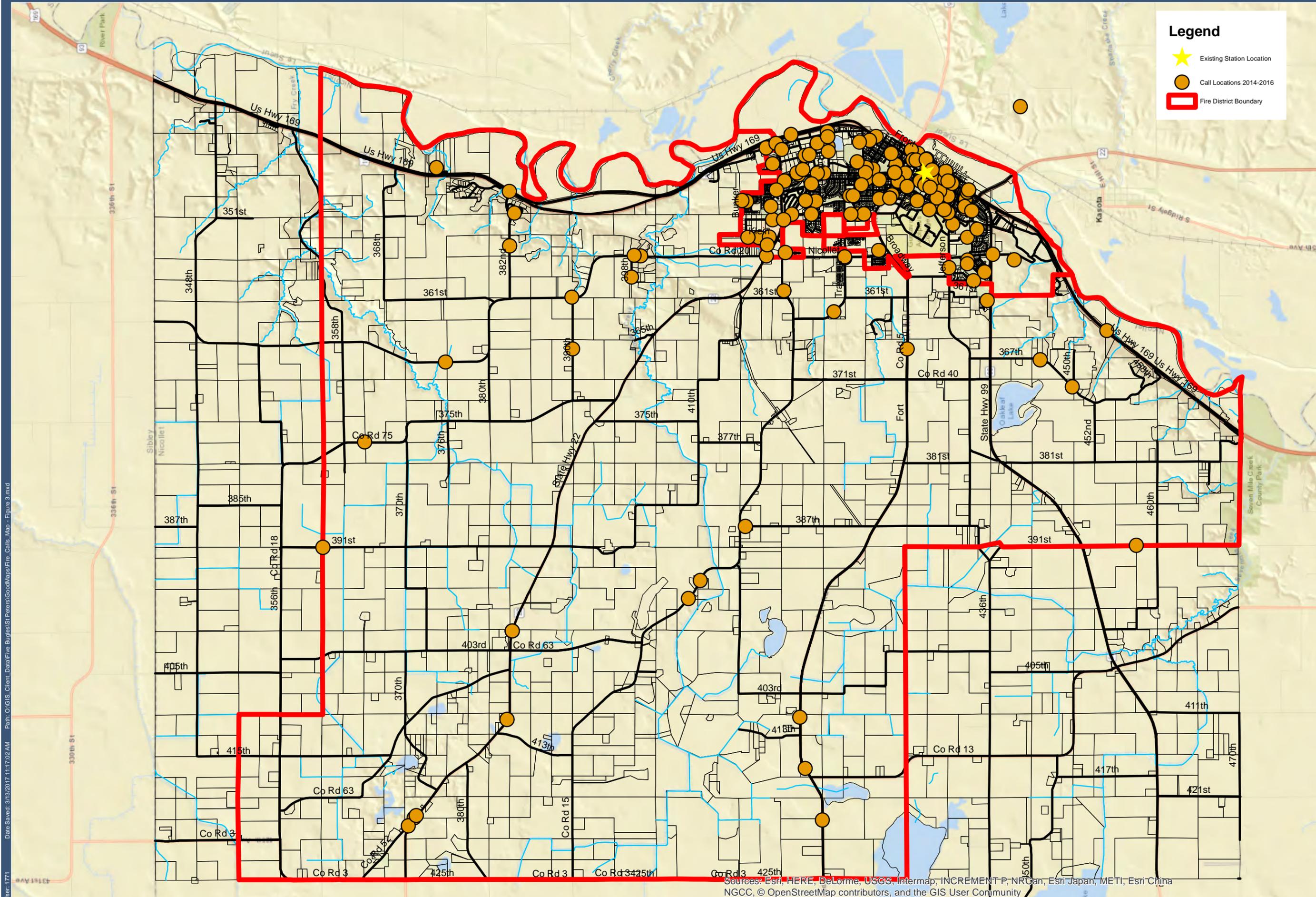
1 in = 5,500 ft

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Data Saved: 3/13/2017 11:11:20 AM Path: O:\GIS\_Client\_Data\Five Bugles\SI\Peter\GoodMap\Speed\_Limit\_Map\_Figure 2.mxd User: 1771

Legend

- ★ Existing Station Location
- Call Locations 2014-2016
- ▭ Fire District Boundary



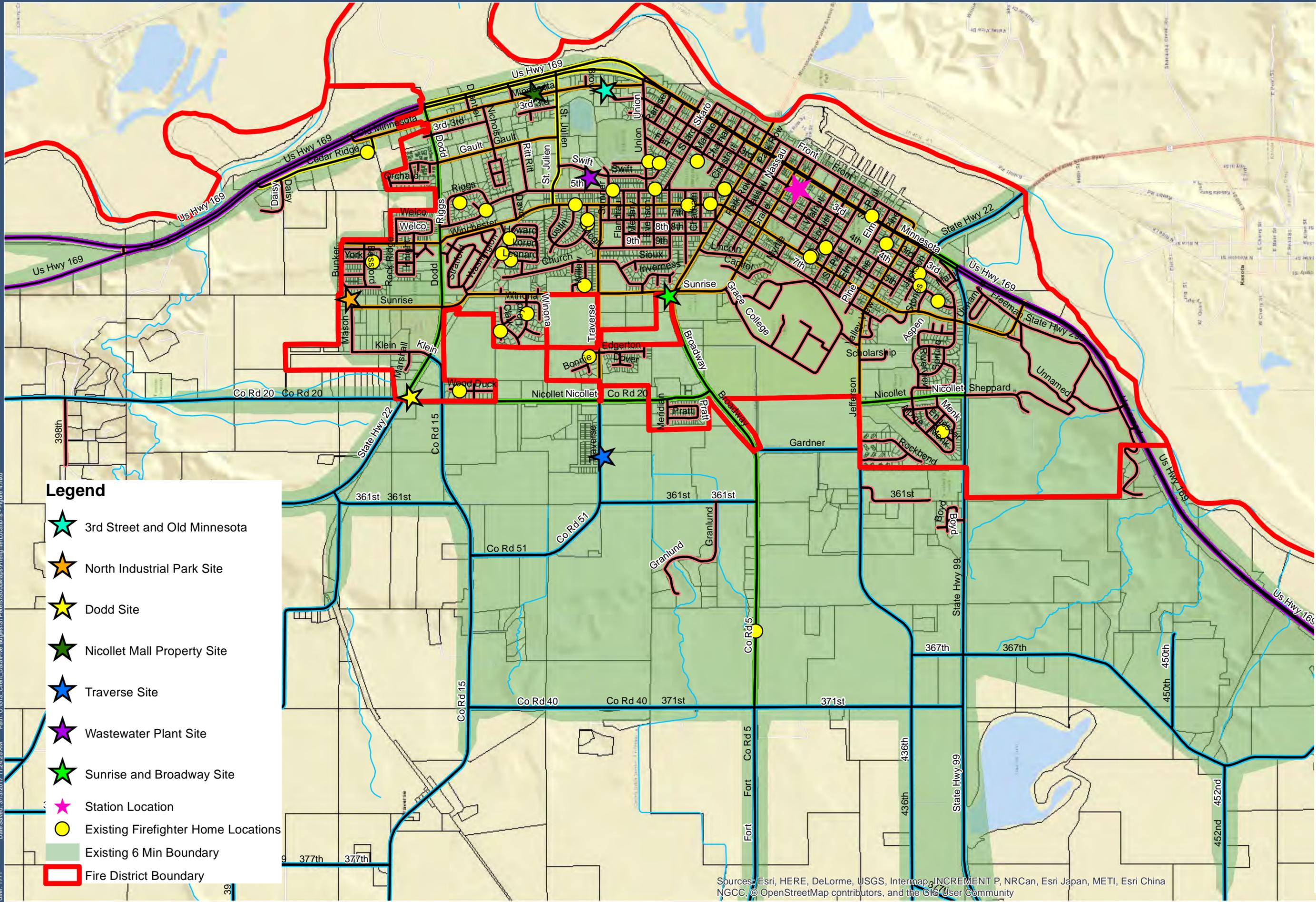
**FIRE CALLS MAP (2014 THROUGH 2016)**  
**FIRE STATION LOCATION STUDY**  
**CITY OF ST PETER**  
**NICOLET COUNTY, MINNESOTA**



1 in = 5,500 ft

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**FIREFIGHTER HOME LOCATIONS AND DRIVE TIME**  
FIRE STATION LOCATION STUDY  
CITY OF ST PETER  
NICOLET COUNTY, MINNESOTA



**Legend**

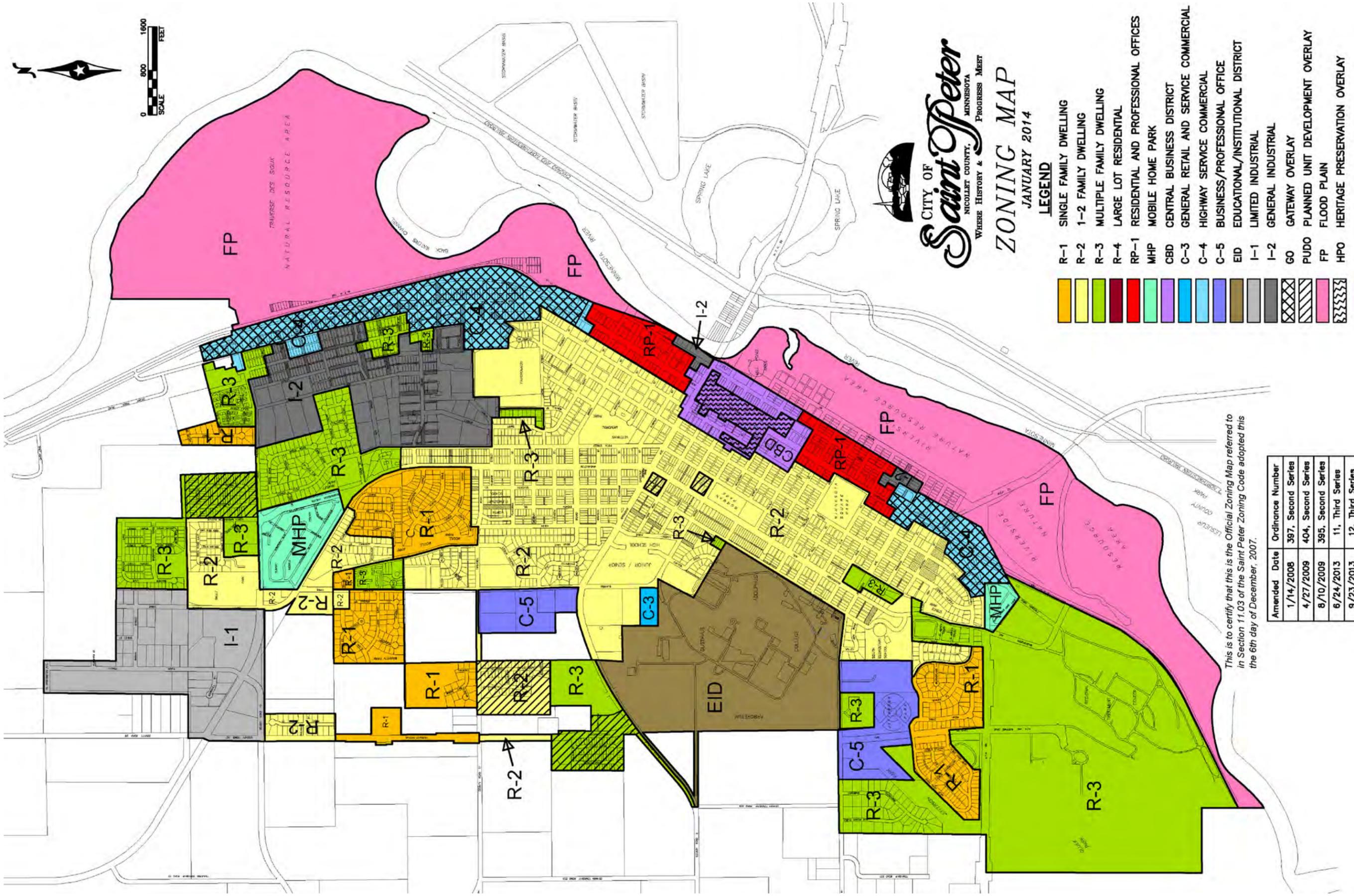
- 3rd Street and Old Minnesota
- North Industrial Park Site
- Dodd Site
- Nicollet Mall Property Site
- Traverse Site
- Wastewater Plant Site
- Sunrise and Broadway Site
- Station Location
- Existing Firefighter Home Locations
- Existing 6 Min Boundary
- Fire District Boundary



1 in = 2,199 ft

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China, NGCC, © OpenStreetMap contributors, and the GIS User Community

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This is to certify that this is the Official Zoning Map referred to in Section 11.03 of the Saint Peter Zoning Code adopted this the 6th day of December, 2007.

Amended	Date	Ordinance Number
1/14/2008		397, Second Series
4/27/2009		404, Second Series
8/10/2009		395, Second Series
6/24/2013		11, Third Series
9/23/2013		12, Third Series

# ZONING MAP

FIRE STATION LOCATION STUDY  
CITY OF ST PETER  
NICOLET COUNTY, MINNESOTA



FIGURE # 5

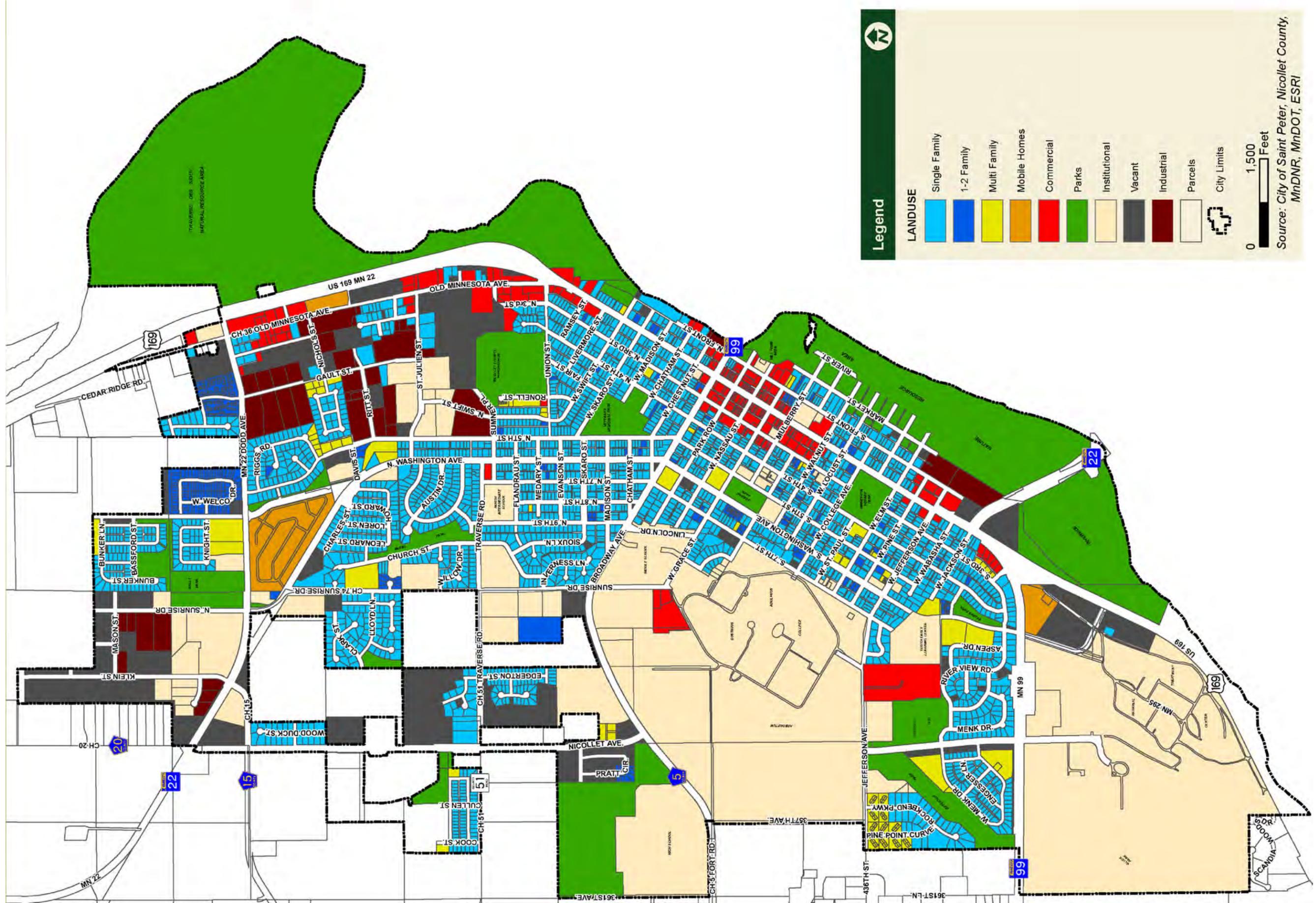
CITY OF *Saint Peter*  
NICOLET COUNTY, MINNESOTA  
WHERE HISTORY & PROGRESS MEET

## ZONING MAP

JANUARY 2014

### LEGEND

- R-1 SINGLE FAMILY DWELLING
- R-2 1-2 FAMILY DWELLING
- R-3 MULTIPLE FAMILY DWELLING
- R-4 LARGE LOT RESIDENTIAL
- RP-1 RESIDENTIAL AND PROFESSIONAL OFFICES
- MHP MOBILE HOME PARK
- CBD CENTRAL BUSINESS DISTRICT
- C-3 GENERAL RETAIL AND SERVICE COMMERCIAL
- C-4 HIGHWAY SERVICE COMMERCIAL
- C-5 BUSINESS/PROFESSIONAL OFFICE
- EID EDUCATIONAL/INSTITUTIONAL DISTRICT
- I-1 LIMITED INDUSTRIAL
- I-2 GENERAL INDUSTRIAL
- GO GATEWAY OVERLAY
- PUDO PLANNED UNIT DEVELOPMENT OVERLAY
- FP FLOOD PLAIN
- HPO HERITAGE PRESERVATION OVERLAY



**EXISTING LAND USE MAP**  
**FIRE STATION LOCATION STUDY**  
 CITY OF ST PETER  
 NICOLET COUNTY, MINNESOTA

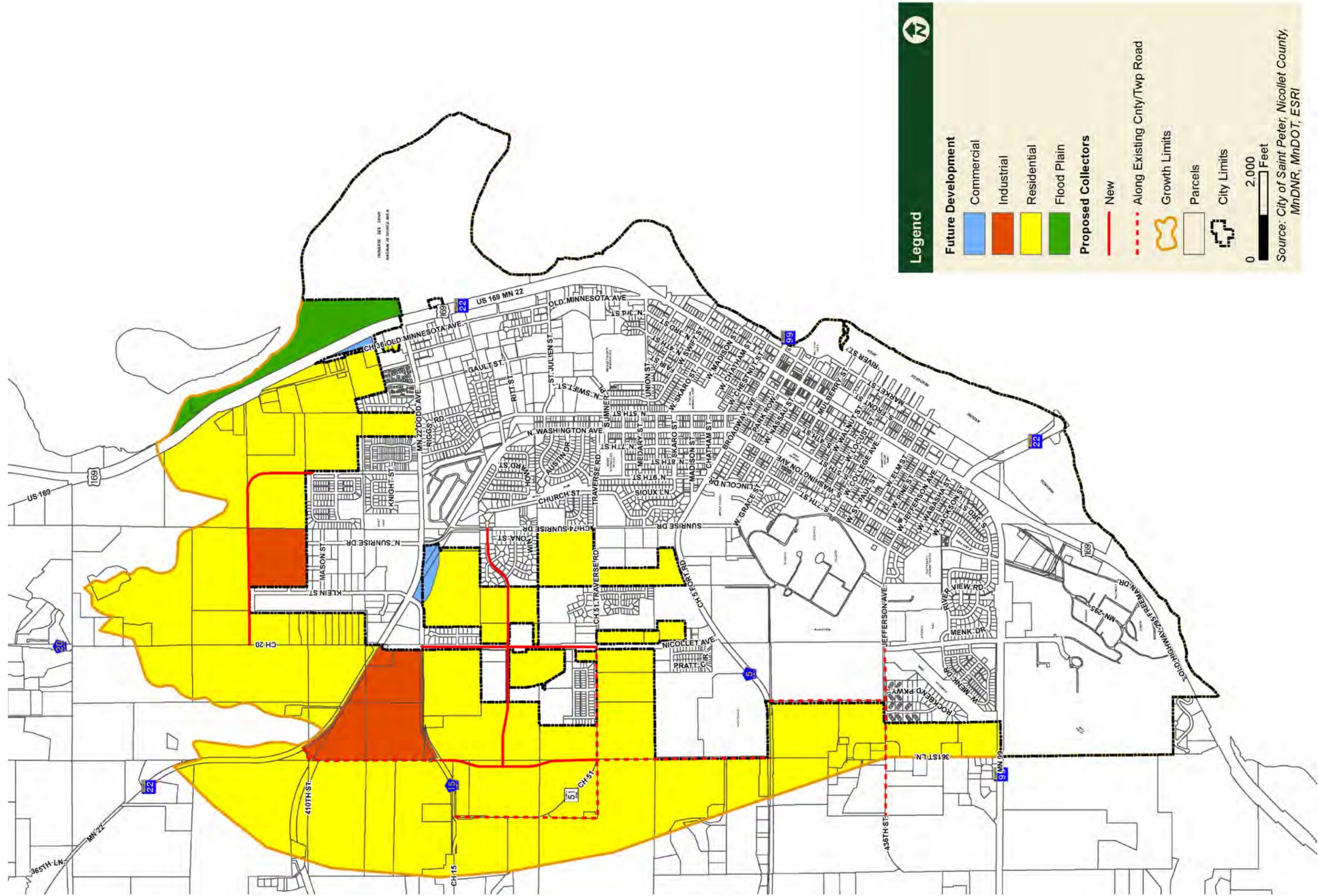


FIGURE # 7



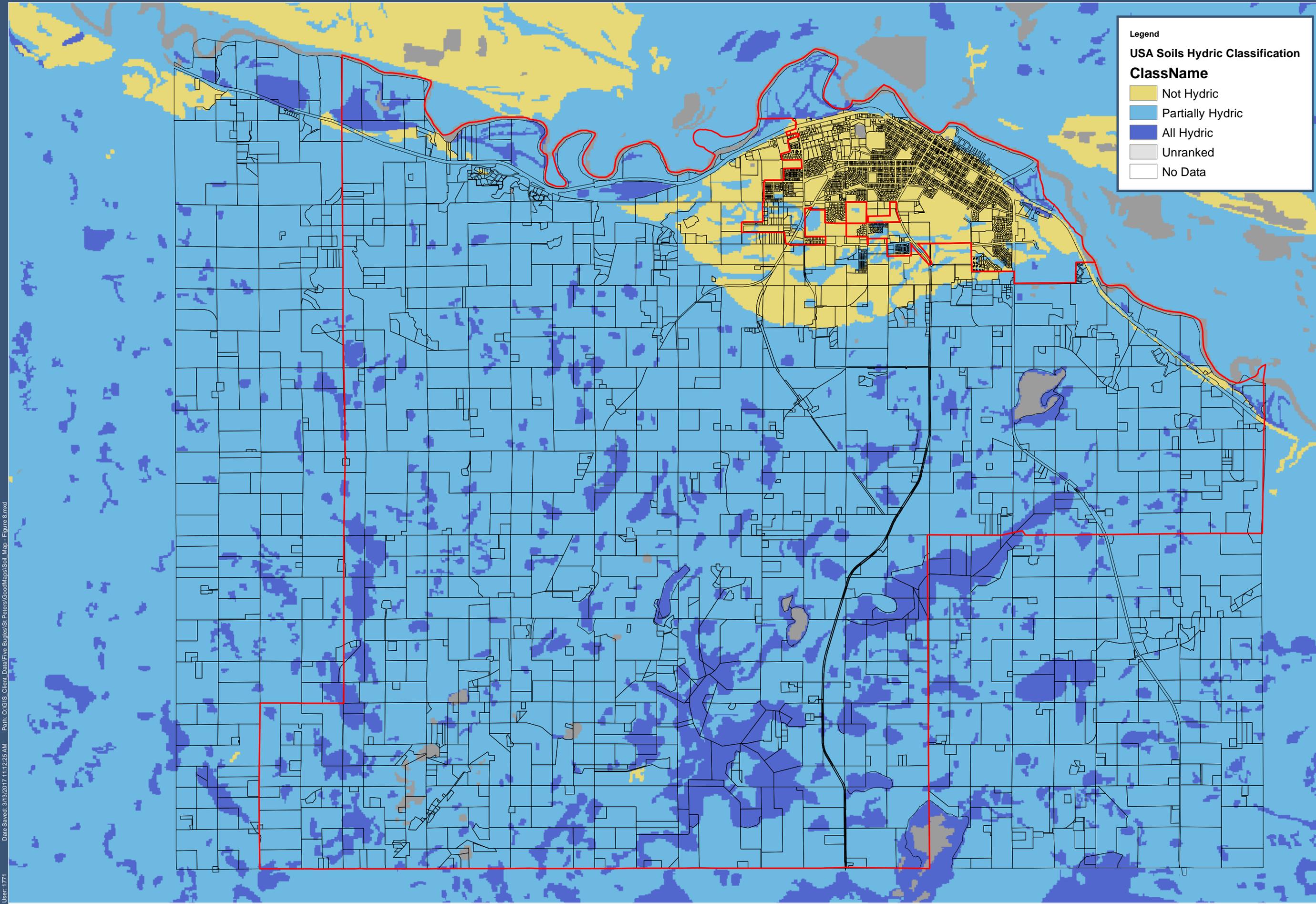
**FUTURE LAND USE MAP**  
**FIRE STATION LOCATION STUDY**  
**CITY OF ST PETER**  
**NICOLET COUNTY, MINNESOTA**

**Legend**

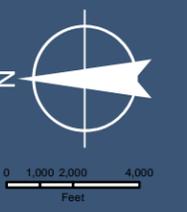
**USA Soils Hydric Classification**

**ClassName**

- Not Hydric
- Partially Hydric
- All Hydric
- Unranked
- No Data



**SOIL SURVEY MAP**  
**FIRE STATION LOCATION STUDY**  
**CITY OF ST PETER**  
**NICOLET COUNTY, MINNESOTA**



1 in = 5,500 ft

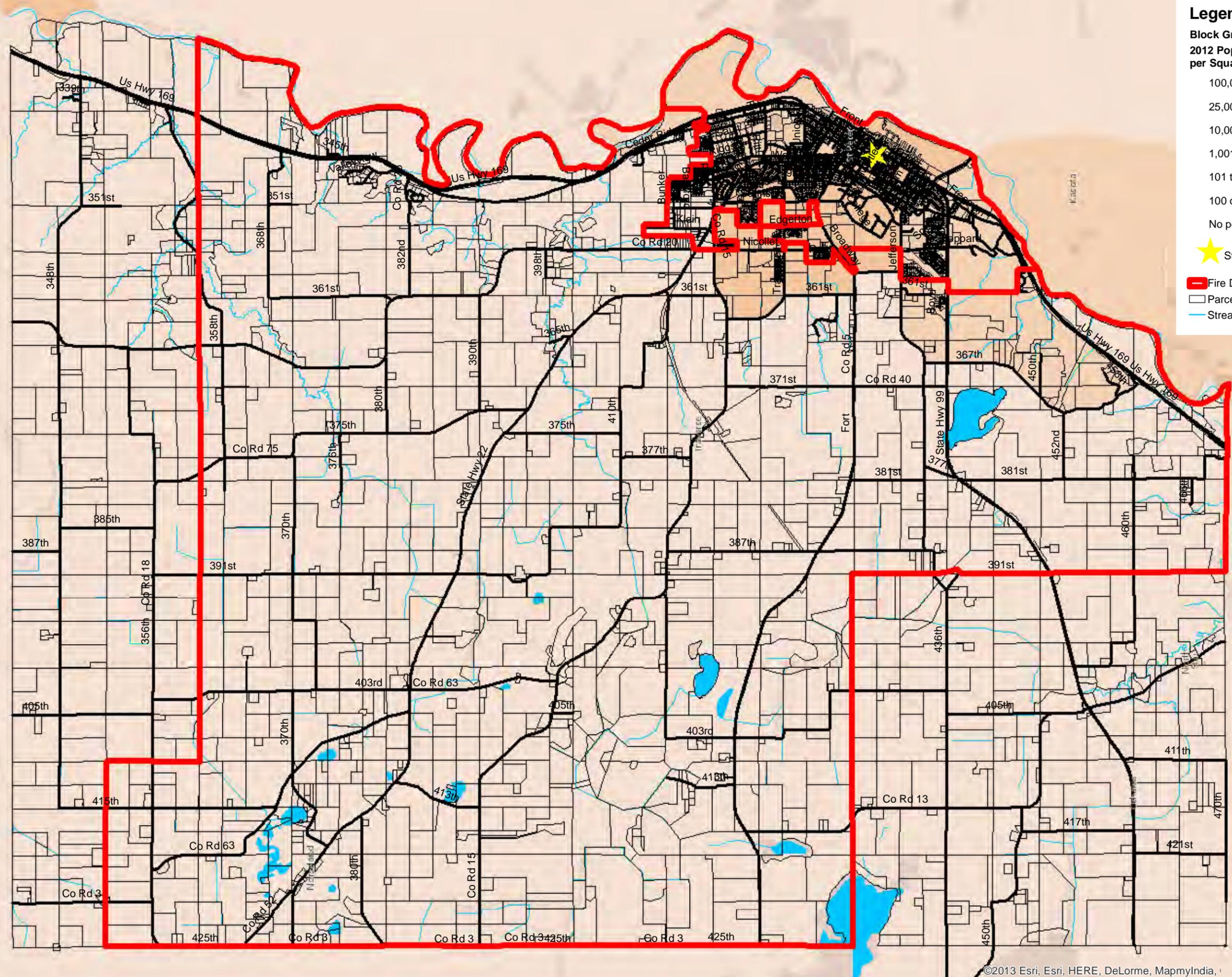


**Legend**

**Block Groups**  
2012 Population Density (Pop per Square Mile) (Esri)

- 100,001 or more people
- 25,001 to 100,000 people
- 10,001 to 25,000 people
- 1,001 to 10,000 people
- 101 to 1,000 people
- 100 or less people
- No population

- Station Location
- Fire District Boundary
- Parcel
- Stream



**POPULATION DENSITY MAP**  
**FIRE STATION LOCATION STUDY**  
 CITY OF ST PETER  
 NICOLET COUNTY, MINNESOTA



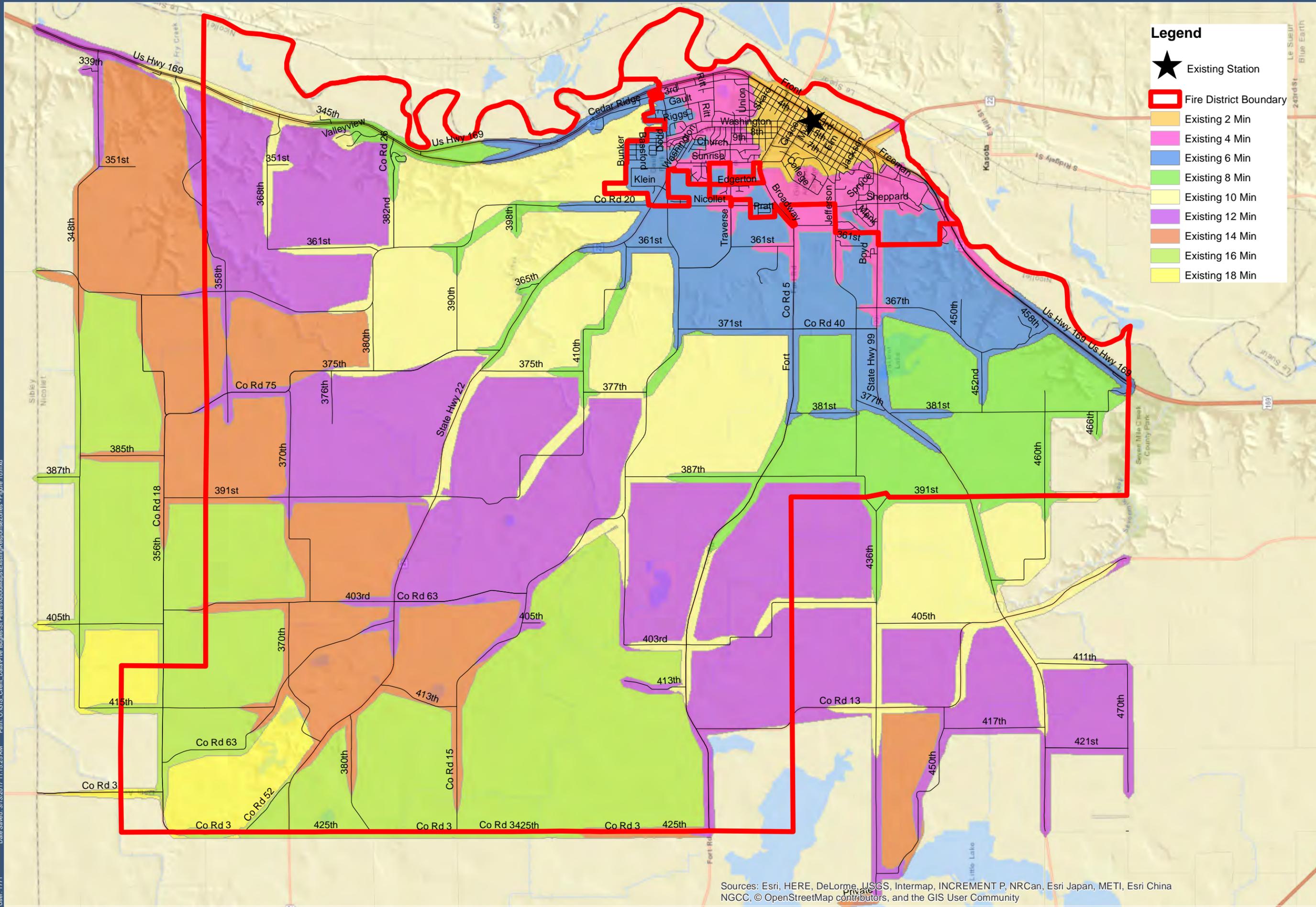
1 in = 5,500 ft

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**EXISTING STATION RESPONSE ZONES**  
FIRE STATION LOCATION STUDY  
CITY OF ST PETER  
NICOLET COUNTY, MINNESOTA

**Legend**

- Existing Station
- Fire District Boundary
- Existing 2 Min
- Existing 4 Min
- Existing 6 Min
- Existing 8 Min
- Existing 10 Min
- Existing 12 Min
- Existing 14 Min
- Existing 16 Min
- Existing 18 Min



1 in = 5,500 ft

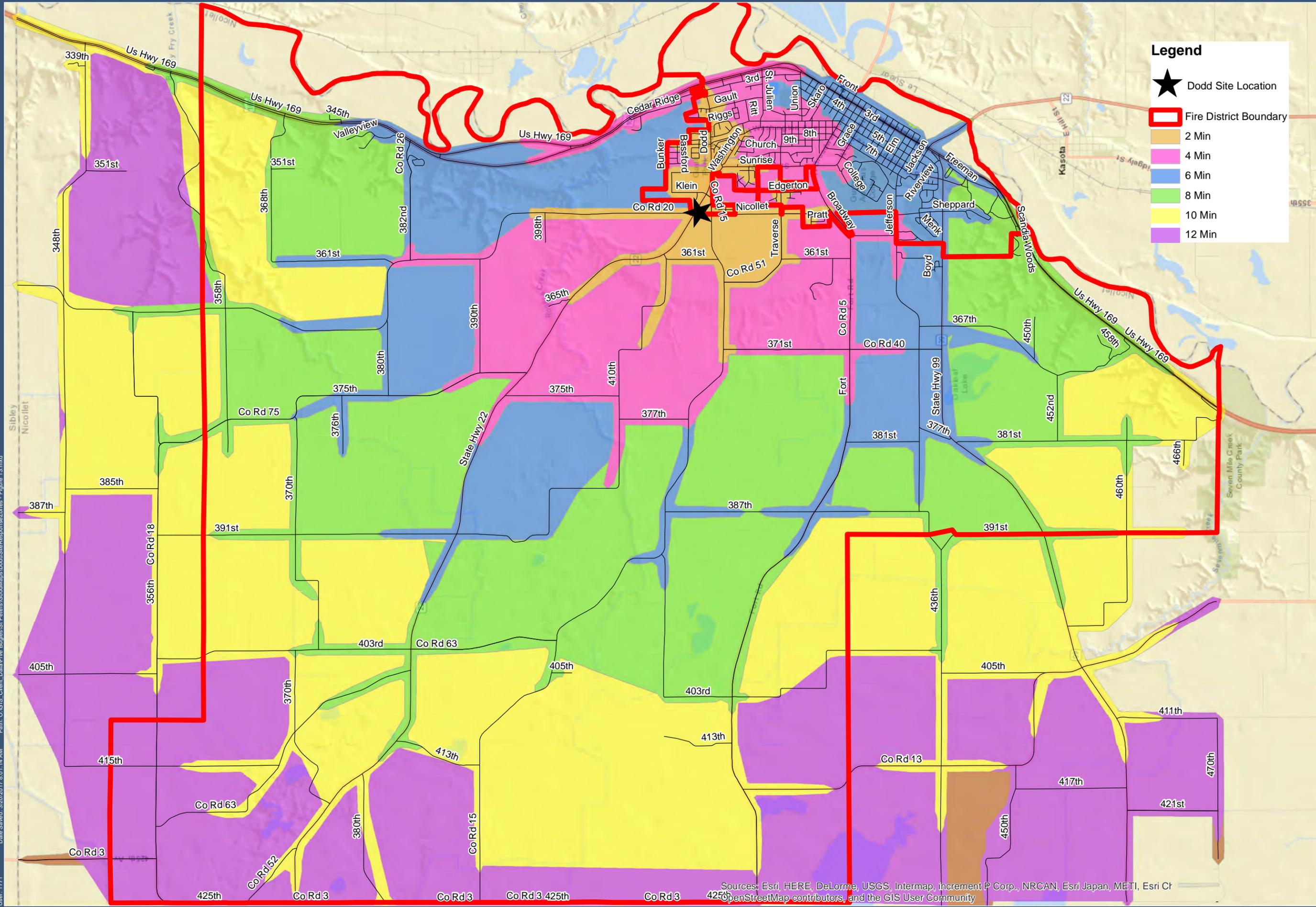
Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China NGCC, © OpenStreetMap contributors, and the GIS User Community





Legend

- ★ Dodd Site Location
- ▭ Fire District Boundary
- 2 Min
- 4 Min
- 6 Min
- 8 Min
- 10 Min
- 12 Min



**DODD LOCATION RESPONSE ZONES**  
 FIRE STATION LOCATION STUDY  
 CITY OF ST PETER  
 NICOLET COUNTY, MINNESOTA

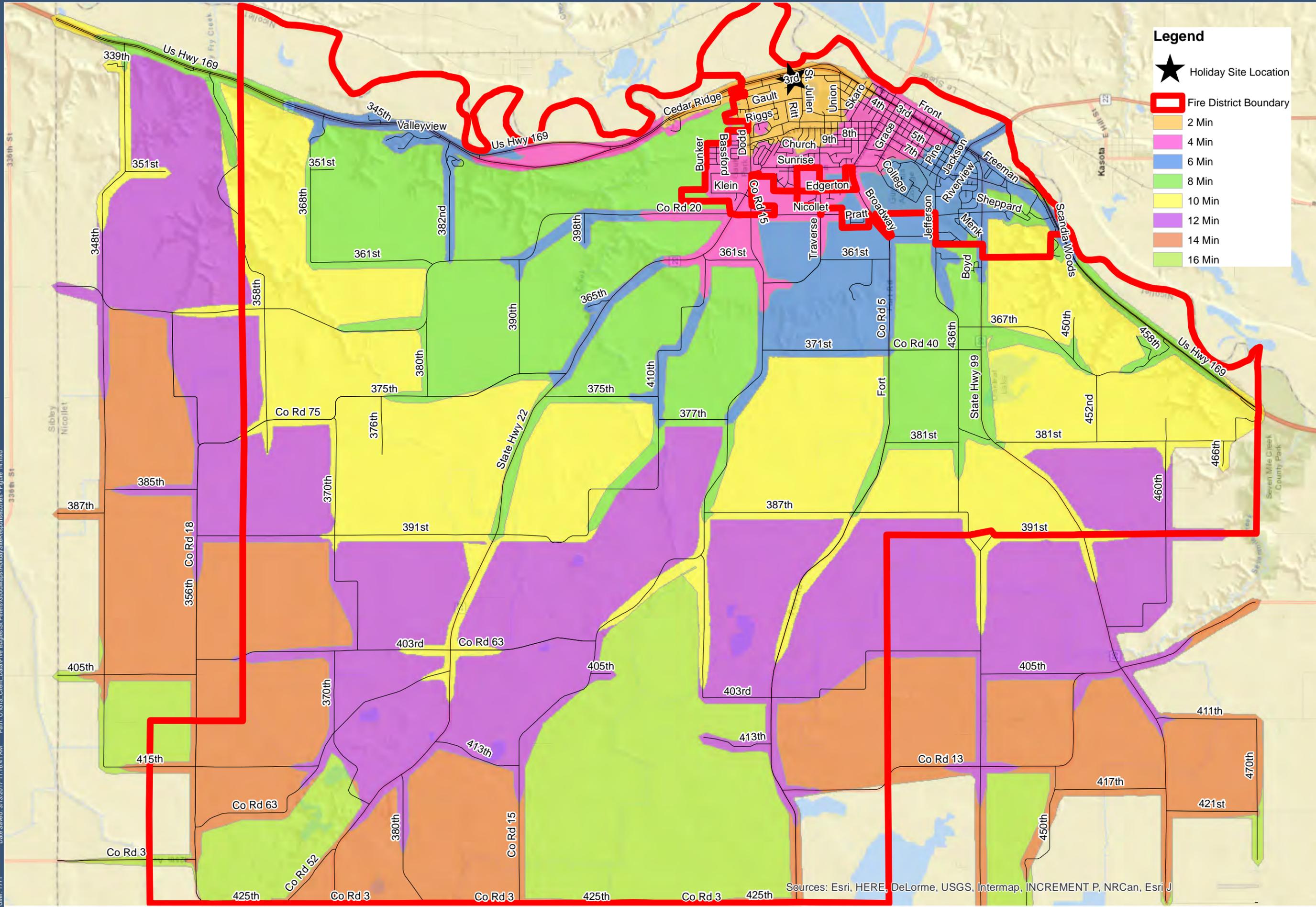


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Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri Ch  
 OpenStreetMap contributors, and the GIS User Community

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**Legend**

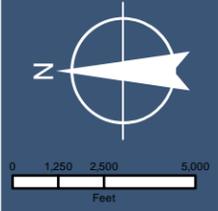
- ★ Holiday Site Location
- ▭ Fire District Boundary
- 2 Min
- 4 Min
- 6 Min
- 8 Min
- 10 Min
- 12 Min
- 14 Min
- 16 Min

FIGURE # 14



**NICOLLET MALL PROPERTY (NORTH OF HOLIDAY) LOCATION**

**RESPONSE ZONES**  
FIRE STATION LOCATION STUDY  
CITY OF ST PETER  
NICOLET COUNTY, MINNESOTA



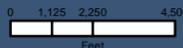
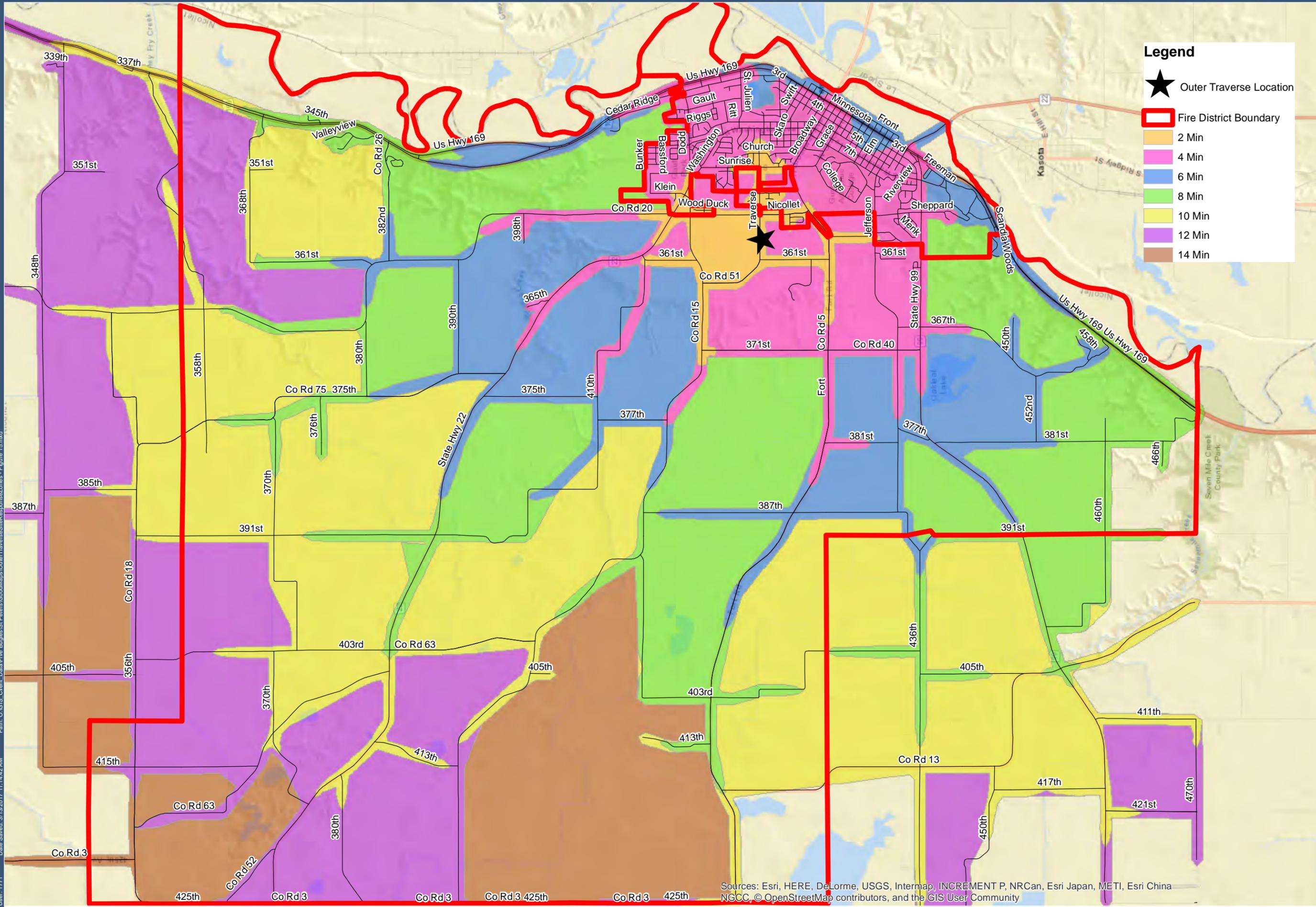
1 in = 5,000 ft

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri J

OUTER TRAVERSE LOCATION RESPONSE ZONES  
FIRE STATION LOCATION STUDY  
CITY OF ST PETER  
NICOLET COUNTY, MINNESOTA

Legend

- ★ Outer Traverse Location
- Fire District Boundary
- 2 Min
- 4 Min
- 6 Min
- 8 Min
- 10 Min
- 12 Min
- 14 Min



1 in = 5,000 ft

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China NGCC, © OpenStreetMap contributors, and the GIS User Community

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**WASTEWATER PLANT LOCATION RESPONSE ZONES**  
FIRE STATION LOCATION STUDY  
CITY OF ST PETER  
NICOLET COUNTY, MINNESOTA

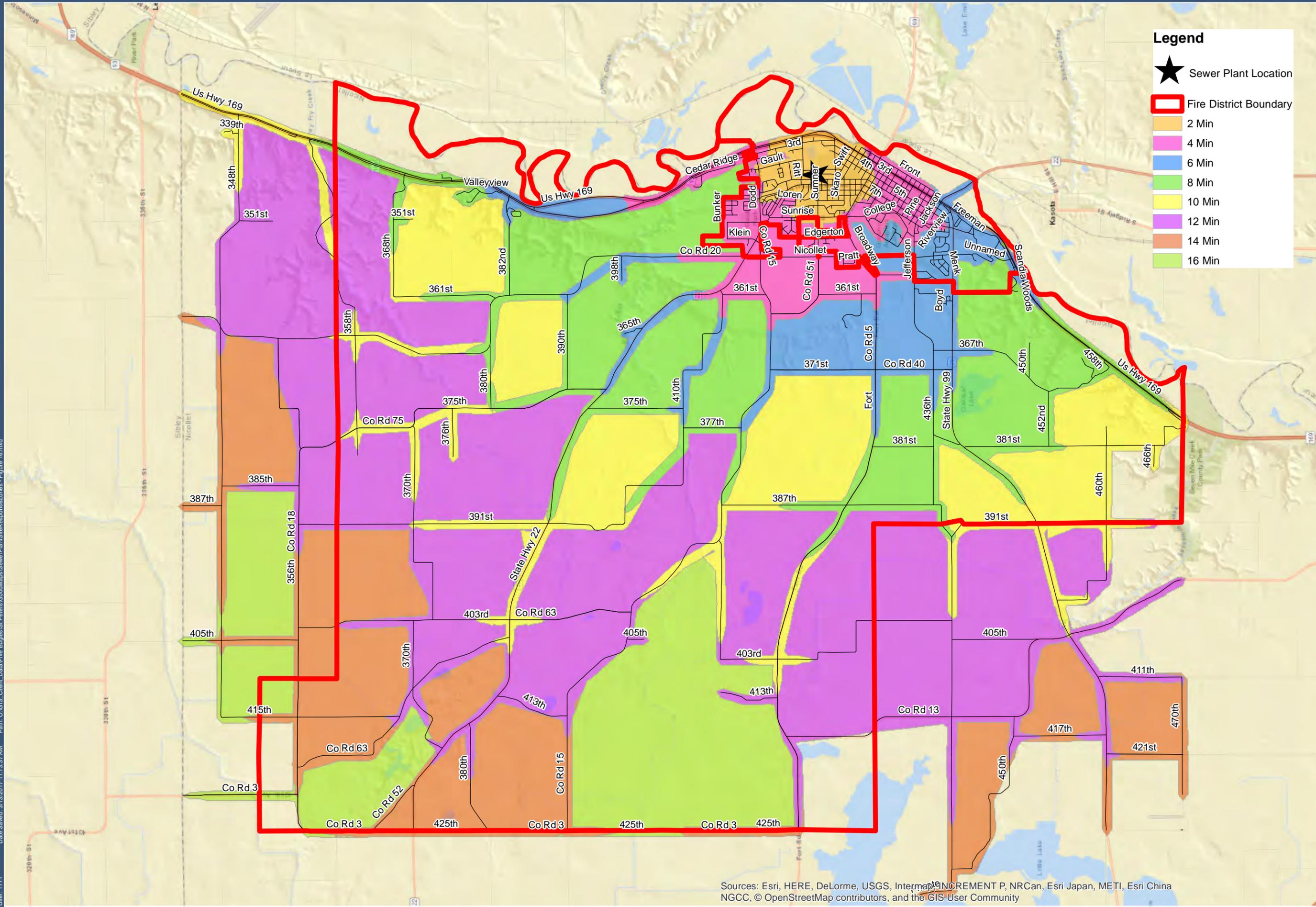


0 1,350 2,700 5,400  
Feet

1 in = 6,000 ft

**Legend**

-  Sewer Plant Location
-  Fire District Boundary
-  2 Min
-  4 Min
-  6 Min
-  8 Min
-  10 Min
-  12 Min
-  14 Min
-  16 Min

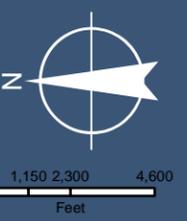
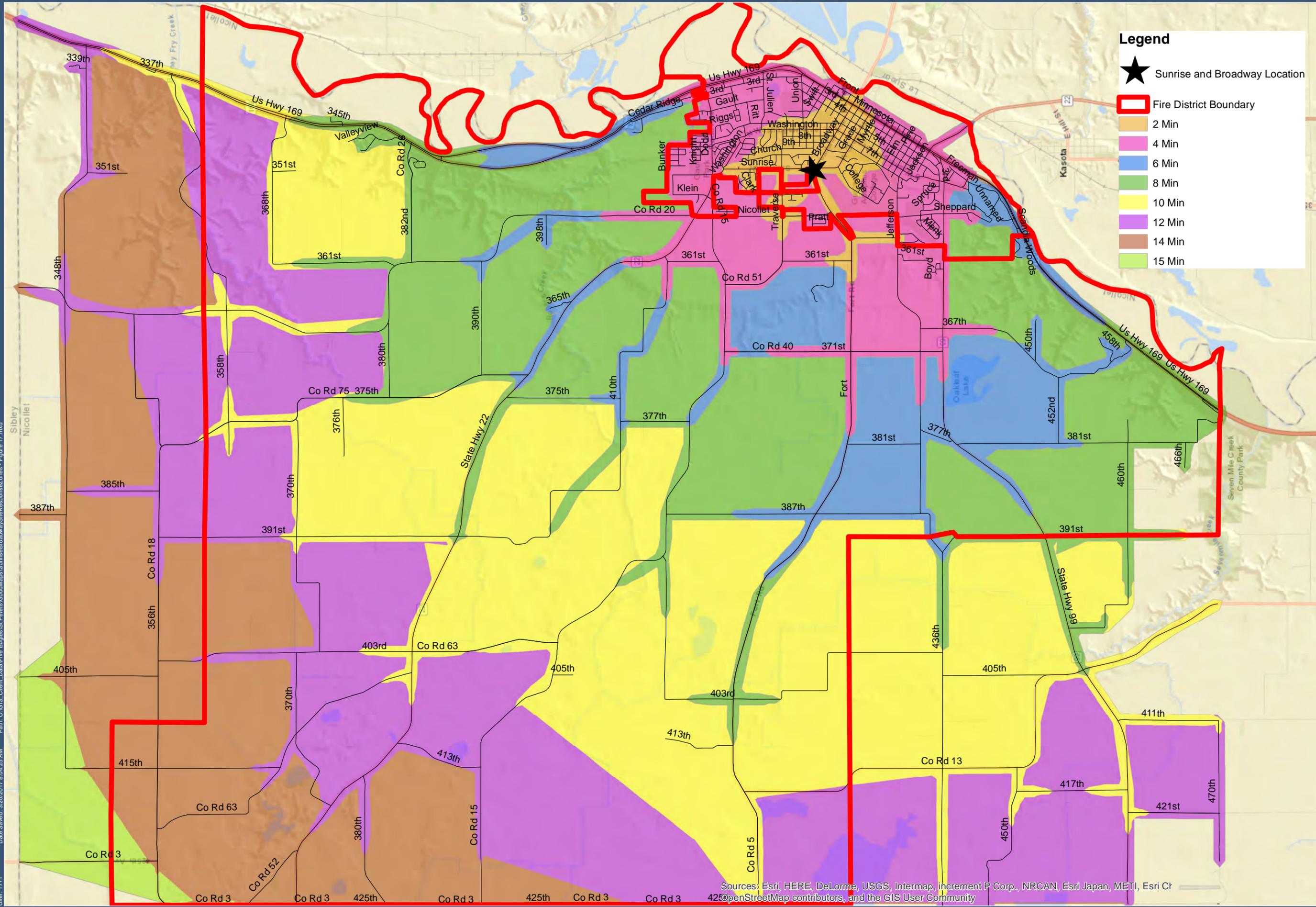


Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China NGCC, © OpenStreetMap contributors, and the GIS User Community

SUNRISE AND BROADWAY LOCATION RESPONSE ZONES  
FIRE STATION LOCATION STUDY  
CITY OF ST PETER  
NICOLET COUNTY, MINNESOTA

Legend

- ★ Sunrise and Broadway Location
- Fire District Boundary
- 2 Min
- 4 Min
- 6 Min
- 8 Min
- 10 Min
- 12 Min
- 14 Min
- 15 Min

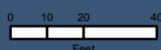


1 in = 5,000 ft

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri Ch...  
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**EXISTING STATION SITE LOCATION**  
FIRE STATION LOCATION STUDY  
CITY OF ST PETER  
NICOLET COUNTY, MINNESOTA



1 in = 50 ft



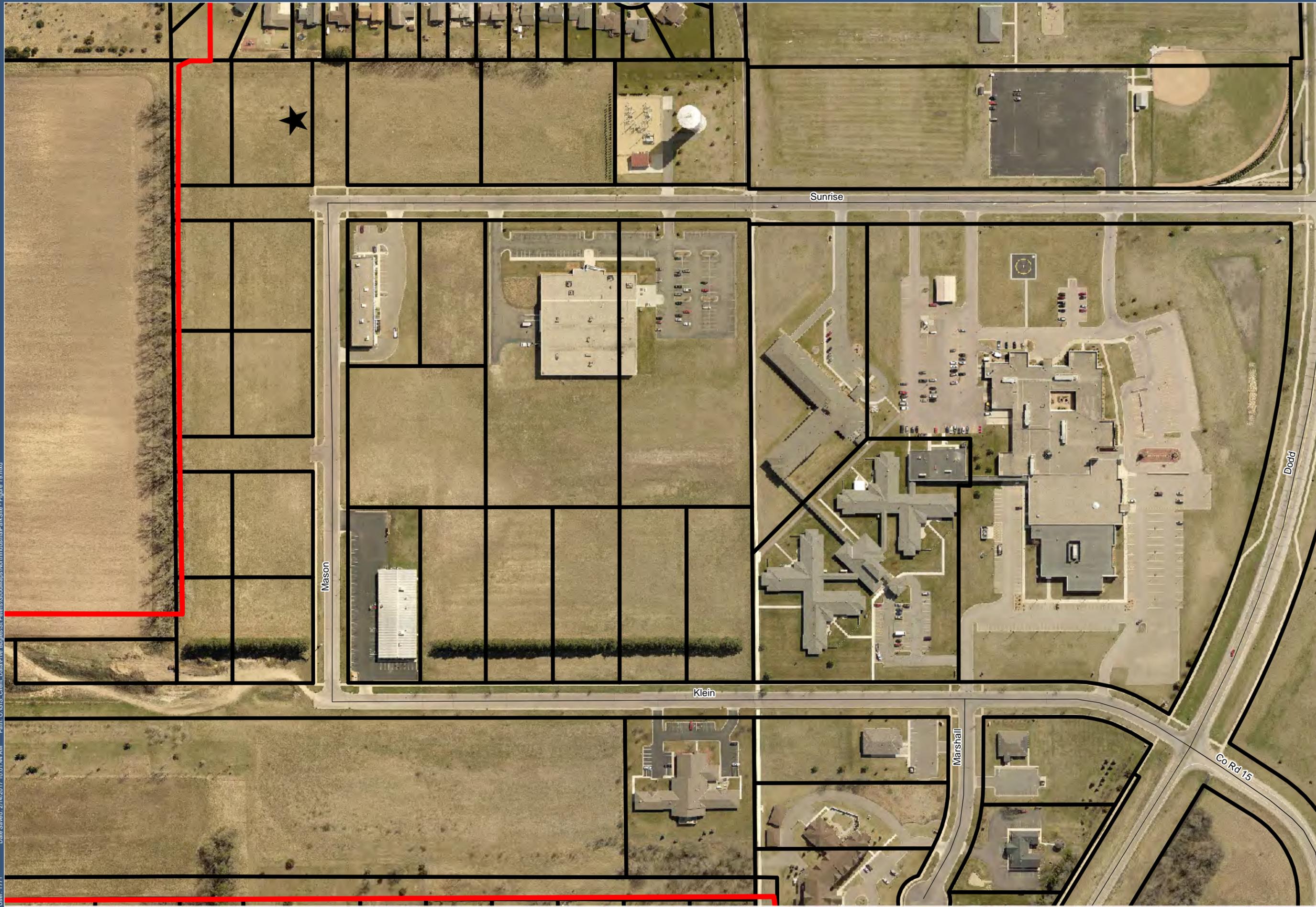
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**NORTH INDUSTRIAL PARK SITE LOCATION**  
FIRE STATION LOCATION STUDY  
CITY OF ST PETER  
NICOLET COUNTY, MINNESOTA



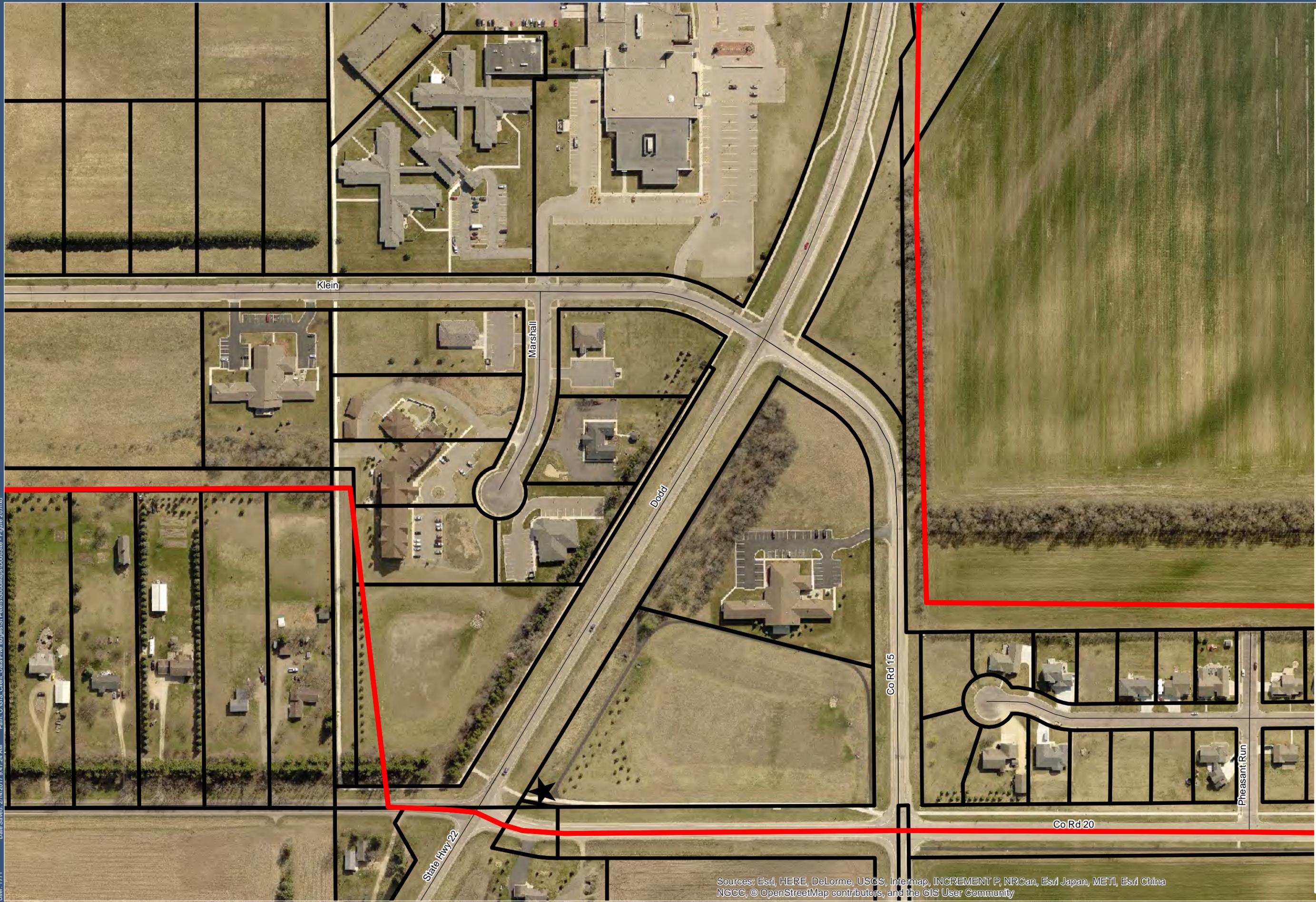
0 45 90 180  
Feet

1 in = 200 ft





**DODD SITE LOCATION**  
**FIRE STATION LOCATION STUDY**  
CITY OF ST PETER  
NICOLET COUNTY, MINNESOTA



0 45 90 180  
Feet

1 in = 200 ft

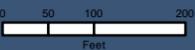
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**NICOLLET MALL PROPERTY (NORTH OF HOLIDAY) SITE LOCATION**

FIRE STATION LOCATION STUDY

CITY OF ST PETER  
NICOLET COUNTY, MINNESOTA



1 in = 200 ft

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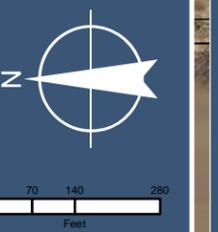
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FIGURE # 22



**OUTER TRAVERSE SITE LOCATION**  
FIRE STATION LOCATION STUDY  
CITY OF ST PETER  
NICOLET COUNTY, MINNESOTA



1 in = 300 ft

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China NGCC, © OpenStreetMap contributors, and the GIS User Community



**WASTEWATER PLANT SITE LOCATION**  
FIRE STATION LOCATION STUDY  
CITY OF ST PETER  
NICOLET COUNTY, MINNESOTA



0 45 90 180  
Feet

1 in = 200 ft



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FIGURE # 24



**SUNRISE AND BROADWAY SITE LOCATION**  
FIRE STATION LOCATION STUDY  
CITY OF ST PETER  
NICOLET COUNTY, MINNESOTA

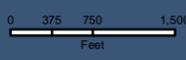
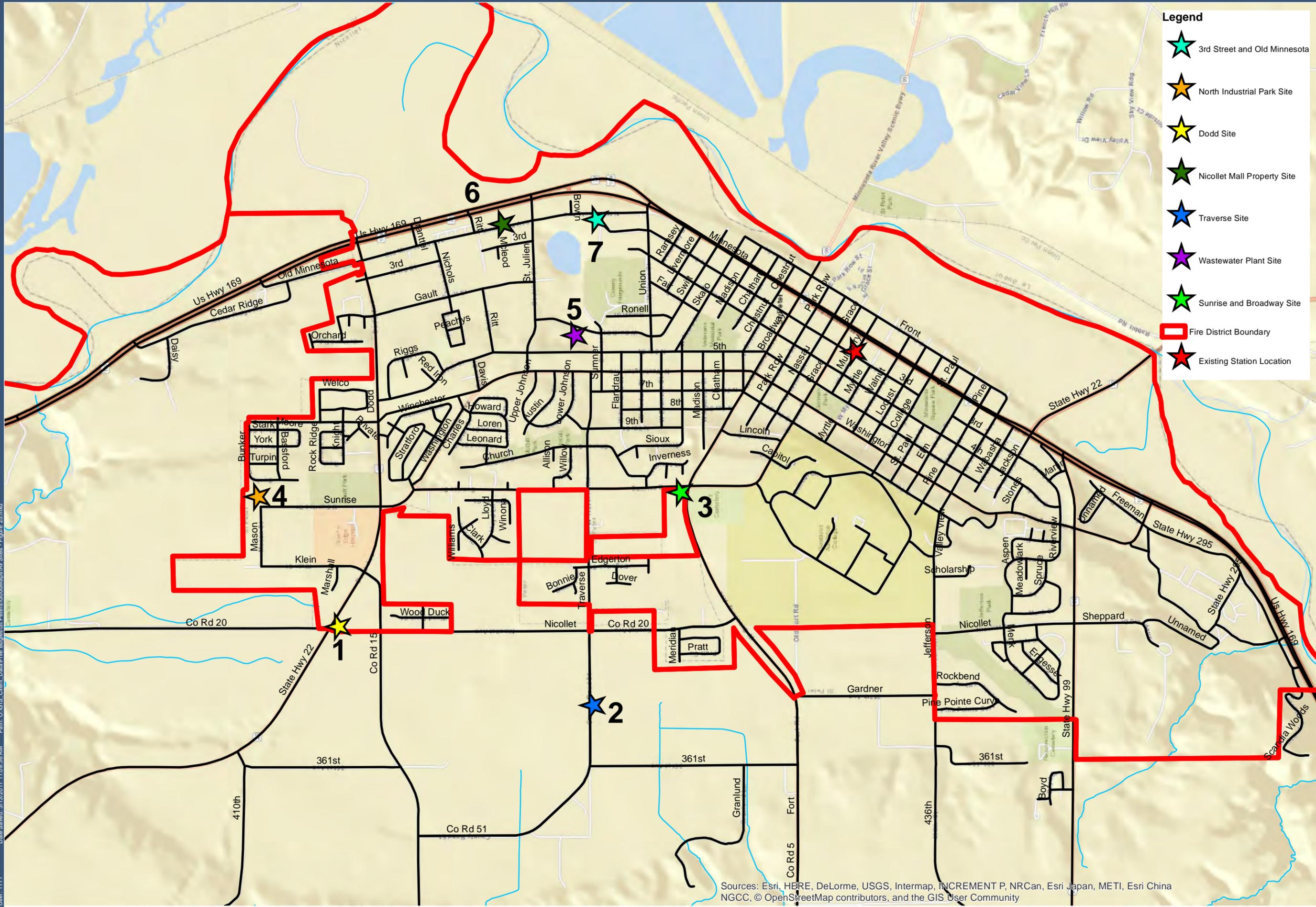


0 45 90 180  
Feet

1 in = 200 ft

ALL SITES MAP WITH RANKING  
FIRE STATION LOCATION STUDY  
CITY OF ST PETER  
NICOLET COUNTY, MINNESOTA

- Legend**
-  3rd Street and Old Minnesota
  -  North Industrial Park Site
  -  Dodd Site
  -  Nicollet Mall Property Site
  -  Traverse Site
  -  Wastewater Plant Site
  -  Sunrise and Broadway Site
  -  Fire District Boundary
  -  Existing Station Location



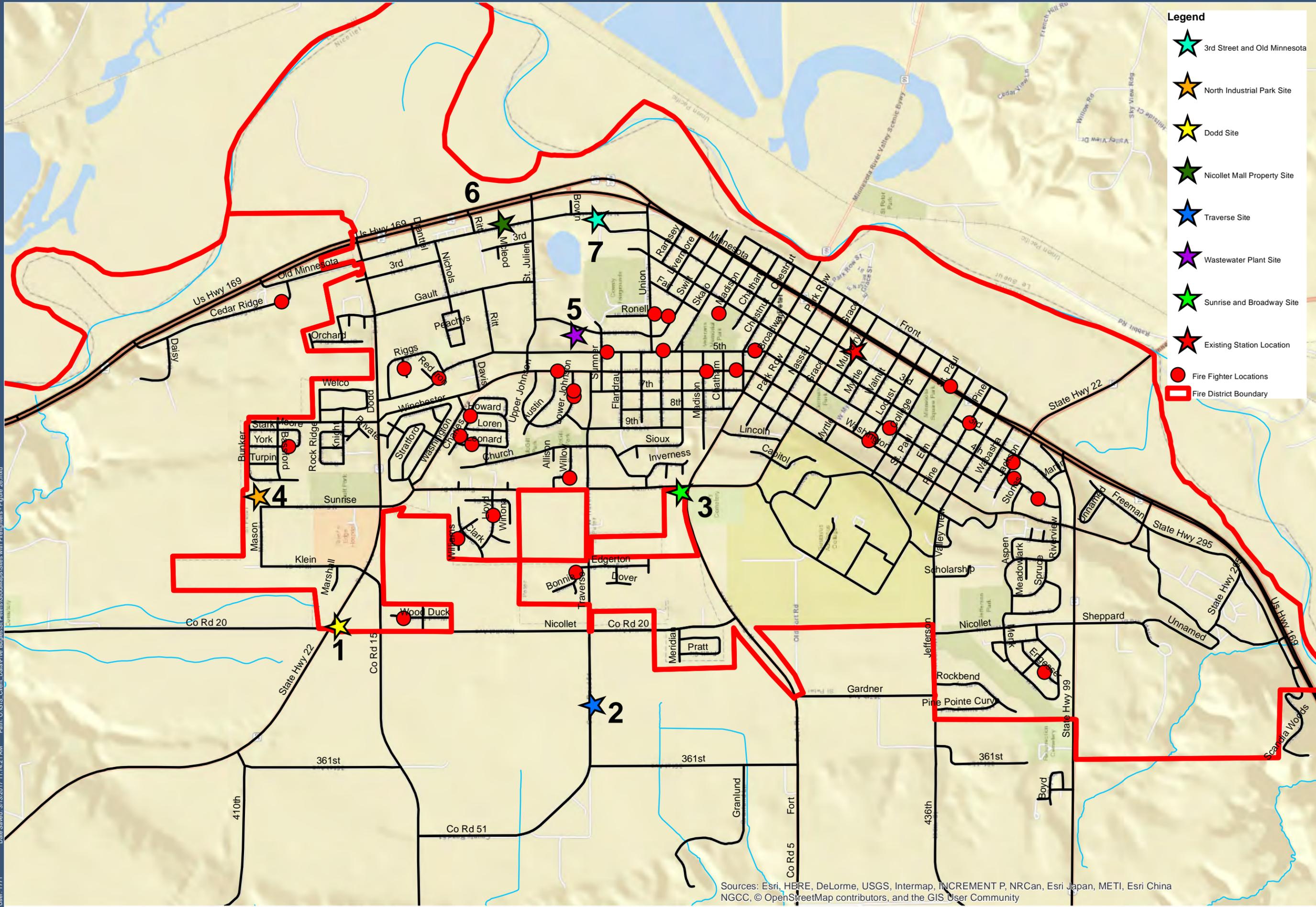
1 in = 1,667 ft

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China NGCC, © OpenStreetMap contributors, and the GIS User Community

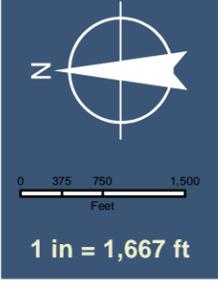
ALL SITES MAP WITH FIRE FIGHTER LOCATIONS

FIRE STATION LOCATION STUDY

CITY OF ST PETER  
NICOLET COUNTY, MINNESOTA



- Legend**
- ★ 3rd Street and Old Minnesota
  - ★ North Industrial Park Site
  - ★ Dodd Site
  - ★ Nicollet Mall Property Site
  - ★ Traverse Site
  - ★ Wastewater Plant Site
  - ★ Sunrise and Broadway Site
  - ★ Existing Station Location
  - Fire Fighter Locations
  - Fire District Boundary



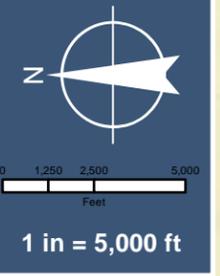
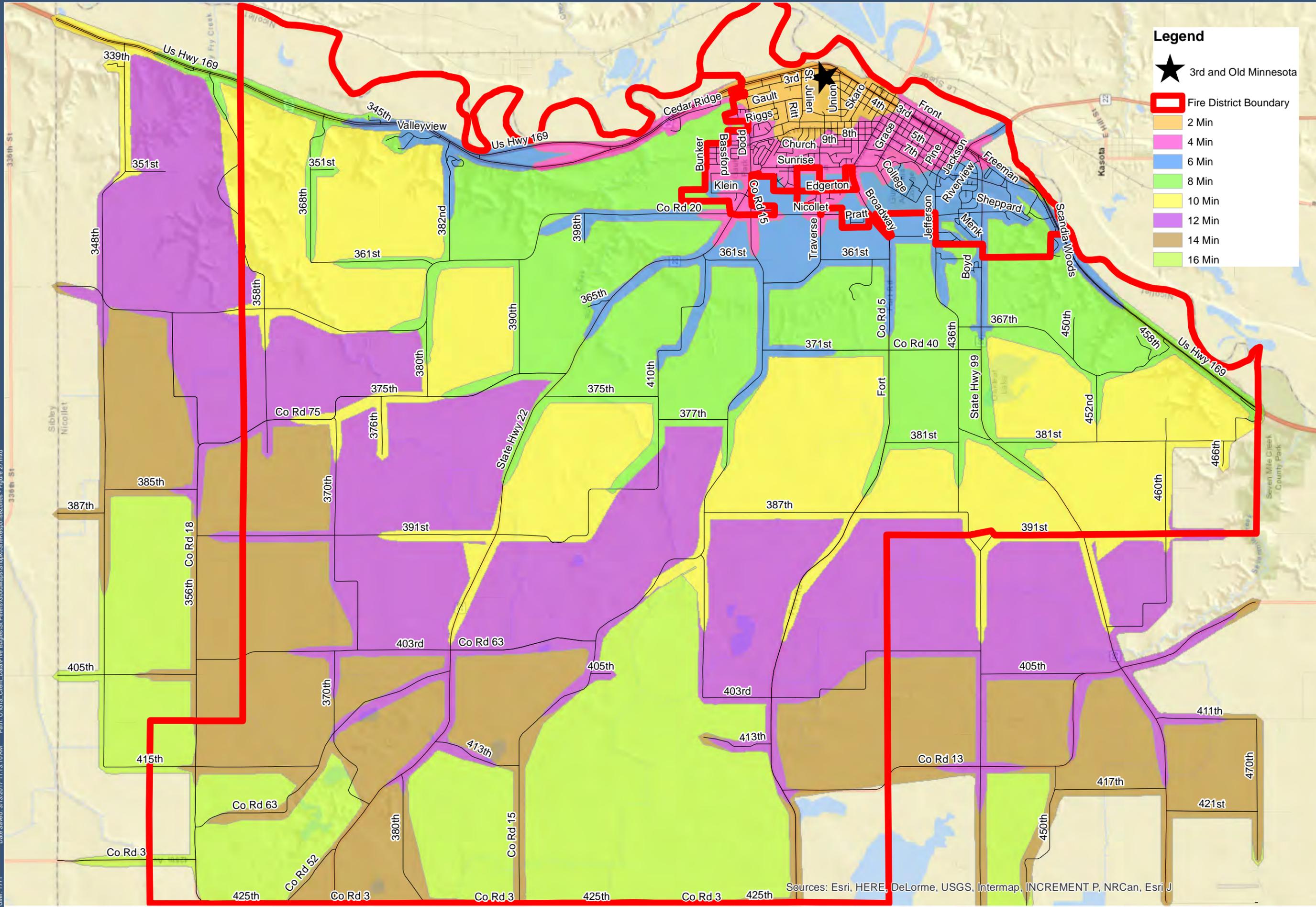
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User: 1771 Date Saved: 3/13/2017 11:42:21 AM Path: O:\GIS\_Cient\_Data\Five\_Budget\_Sites\_with\_Firefighters\_Figure\_26.mxd

3RD AND OLD MINNESOTA LOCATION RESPONSE ZONES  
FIRE STATION LOCATION STUDY  
CITY OF ST PETER  
NICOLET COUNTY, MINNESOTA

Legend

- ★ 3rd and Old Minnesota
- Fire District Boundary
- 2 Min
- 4 Min
- 6 Min
- 8 Min
- 10 Min
- 12 Min
- 14 Min
- 16 Min



Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri J

User: 1771 Date Saved: 3/13/2017 11:31:04AM Path: O:\GIS\_Client\_Data\Fire\_Bugles\SI\_Peters\GoodMap\Shopko\SiteResponseZones - Figure 27.mxd

### Call Analysis Per Zone

Zone	Zone Minutes	Number of Calls (205 Total)	Percentage of Calls	Covers City Boundary
Existing	2	96	46.8%	No
	4	149	72.7%	No
	6	179	87.3%	Yes
	8	187	91.2%	Yes
	10	193	94.1%	Yes
	12	198	96.6%	Yes
	14	203	99.0%	Yes
	16	204	99.5%	Yes
	18	205	100.0%	Yes
Nicollet Mall Property	2	35	17.1%	No
	4	144	70.2%	No
	6	183	89.3%	No
	8	188	91.7%	No
	10	194	94.6%	Yes
	12	200	97.6%	Yes
	14	205	100.0%	Yes
	16	205	100.0%	Yes
Wastewater Plant	2	81	39.5%	No
	4	164	80.0%	No
	6	181	88.3%	No
	8	188	91.7%	Yes
	10	195	95.1%	Yes
	12	201	98.0%	Yes
	14	205	100.0%	Yes
	16	205	100.0%	Yes
Outer Traverse	2	20	9.8%	No
	4	154	75.1%	No
	6	183	89.3%	No
	8	196	95.6%	Yes
	10	201	98.0%	Yes
	12	205	100.0%	Yes
	14	205	100.0%	Yes
Dodd	2	34	16.6%	No
	4	83	40.5%	No
	6	186	90.7%	No
	8	197	96.1%	Yes
	10	205	100.0%	Yes
	12	205	100.0%	Yes
	13	205	100.0%	Yes
North Industrial Park	2	19	9.3%	No
	4	78	38.0%	No
	6	167	81.5%	No
	8	191	93.2%	No
	10	199	97.1%	Yes
	12	205	100.0%	Yes
	14	205	100.0%	Yes
Sunrise and Broadway	2	76	37.1%	No
	4	176	85.9%	No
	6	182	88.8%	No
	8	191	93.2%	Yes
	10	198	96.6%	Yes
	12	201	98.0%	Yes
	14	205	100.0%	Yes
	15	205	100.0%	Yes
3rd and Old Minnesota	2	39	19.0%	No
	4	159	77.6%	No
	6	183	89.3%	No
	8	188	91.7%	Yes
	10	194	94.6%	Yes
	12	200	97.6%	Yes
	14	204	99.5%	Yes
	16	205	100.0%	Yes

Location Name	Existing		North Industrial Park		3rd/Minnesota		Dodd		Nicollet Mall Property		Traverse		Wastewater Plant		Sunrise/Broadway	
	Minutes	Length (FT)	Minutes	Length (FT)	Minutes	Length (FT)	Minutes	Length (FT)	Minutes	Length (FT)	Minutes	Length (FT)	Minutes	Length (FT)	Minutes	Length (FT)
Location 1	4.4	10831.0	2.4	6222.4	3.7	10449.7	2.2	6661.1	3.0	8650.2	3.2	8399.3	2.7	6131.2	2.5	6028.0
Location 2	4.5	13889.4	2.8	8976.7	2.4	8053.3	2.6	9415.4	1.8	4731.5	3.8	14658.2	2.9	7911.9	4.1	12511.8
Location 3	1.1	2323.5	4.9	12891.7	3.4	8816.3	4.7	13330.4	3.8	10469.5	3.8	10652.2	2.6	6585.3	1.8	4790.3
Location 4	3.7	9324.2	1.9	5566.3	2.1	5582.8	1.8	6005.0	1.9	4966.2	3.0	11247.9	1.5	3495.6	2.9	7371.2
Location 5	1.1	2376.0	4.9	12839.1	3.3	8763.8	4.7	13277.8	3.8	10416.9	3.8	10599.7	2.6	6532.7	1.8	4737.7
Location 6	3.1	9851.4	6.1	23208.4	5.2	15458.0	4.8	19189.4	5.9	17596.1	3.3	12960.5	5.2	13770.0	3.3	11345.7
Location 7	1.1	2565.0	4.3	11651.8	2.3	5145.2	4.1	12090.6	2.9	7032.3	3.3	9196.8	1.6	3535.6	1.3	3334.9
Location 8	1.1	2565.0	4.3	11651.8	2.3	5145.2	4.1	12090.6	2.9	7032.3	3.3	9196.8	1.6	3535.6	1.3	3334.9
Location 9	1.1	2565.0	4.3	11651.8	2.3	5145.2	4.1	12090.6	2.9	7032.3	3.3	9196.8	1.6	3535.6	1.3	3334.9
Location 10	1.8	4607.1	6.3	16500.4	3.9	10213.7	5.7	23697.0	4.6	12351.8	4.1	17468.1	4.0	10193.9	3.3	8398.9
Location 11	4.1	10413.0	2.6	6440.6	4.3	11265.3	2.4	6879.3	3.9	11603.7	2.9	7832.8	2.9	7177.8	2.2	5461.5
Location 12	4.0	9955.8	2.8	7097.6	3.6	9343.4	2.6	7536.3	3.3	8726.8	2.8	7524.1	2.3	5256.0	2.1	5152.8
Location 13	1.3	3255.6	6.0	15587.0	3.4	8862.2	5.6	20938.4	4.0	11000.3	4.1	14709.5	3.7	9280.6	2.9	7485.6
Location 14	3.3	8521.4	3.1	10370.0	3.4	9373.7	1.8	6351.1	3.2	8757.0	0.9	2963.5	2.1	5286.3	1.4	3569.9
Location 15	2.6	6748.5	3.0	8276.2	1.9	5453.1	2.8	8714.9	1.7	4836.4	2.2	6152.3	0.9	2048.7	1.5	3781.0
Location 16	0.9	2274.4	5.8	15324.0	3.0	7871.8	5.6	15762.7	3.6	10010.0	4.4	15760.0	3.5	8374.4	2.7	7222.5
Location 17	4.2	10406.2	2.6	6647.2	3.8	9793.8	2.4	7085.9	3.2	9075.1	3.0	7974.5	2.5	5706.4	2.4	5603.2
Location 18	4.9	12773.6	2.3	6484.5	3.5	10231.9	2.1	6923.2	2.9	8432.5	3.3	12166.1	3.0	7659.0	3.6	10019.7
Location 19	4.7	13188.0	1.9	6272.5	4.0	13235.0	0.7	2253.5	3.3	11435.6	1.4	5215.9	3.4	10662.1	2.8	8236.5
Location 20	1.1	2565.0	4.3	11651.8	2.3	5145.2	4.1	12090.6	2.9	7032.3	3.3	9196.8	1.6	3535.6	1.3	3334.9
Location 21	1.1	2565.0	4.3	11651.8	2.3	5145.2	4.1	12090.6	2.9	7032.3	3.3	9196.8	1.6	3535.6	1.3	3334.9
Location 22	1.1	2565.0	4.3	11651.8	2.3	5145.2	4.1	12090.6	2.9	7032.3	3.3	9196.8	1.6	3535.6	1.3	3334.9
Location 23	1.1	2565.0	4.3	11651.8	2.3	5145.2	4.1	12090.6	2.9	7032.3	3.3	9196.8	1.6	3535.6	1.3	3334.9
Location 24	2.6	6641.6	2.9	8169.2	1.9	5346.1	2.7	8607.9	1.7	4729.5	2.2	6259.3	0.8	1941.8	1.5	3888.0
Location 25	3.1	7921.7	2.4	6283.3	2.8	7706.5	2.2	6722.0	2.6	7089.8	1.8	5341.5	1.5	3619.1	1.2	2970.1
Location 26	1.9	4316.8	3.6	9900.3	1.7	3878.4	3.4	10339.0	2.1	5280.6	2.9	8108.0	0.8	1783.9	1.7	4290.2
Location 27	1.1	2565.0	4.3	11651.8	2.3	5145.2	4.1	12090.6	2.9	7032.3	3.3	9196.8	1.6	3535.6	1.3	3334.9
Location 28	1.1	2565.0	4.3	11651.8	2.3	5145.2	4.1	12090.6	2.9	7032.3	3.3	9196.8	1.6	3535.6	1.3	3334.9
Location 29	1.5	3328.6	4.5	12038.2	1.7	3803.3	4.4	12476.9	2.3	5602.8	3.9	10245.8	1.6	3607.0	1.9	4635.0
Location 30	2.5	6556.7	2.6	7513.8	1.6	4690.7	2.5	7952.5	1.4	4074.0	2.4	6975.1	0.8	1856.9	1.7	4603.8
Location 31	4.3	13943.3	4.7	18635.1	5.7	16923.0	3.4	14616.2	5.6	18040.8	1.9	8387.2	4.5	14570.1	2.5	9363.0
Location 32	2.2	4885.3	6.5	16867.9	4.4	11221.7	5.8	23492.8	5.0	13359.8	4.3	17263.8	4.2	10561.5	3.4	8766.5
Location 33	1.2	3148.2	3.9	10922.3	2.4	5403.9	3.8	11361.0	2.7	7482.5	3.1	8638.0	1.4	3598.3	1.1	2776.0
Location 34	4.2	10365.4	2.0	5704.5	2.6	6624.1	1.8	6143.2	2.4	6007.4	3.1	11386.1	2.0	4536.9	3.4	9239.7
Location 35	1.9	4286.9	6.3	16384.6	4.1	10623.3	5.6	20980.4	4.8	12761.4	4.1	14751.4	4.0	10078.2	3.2	8283.2
Location 36	2.2	4943.4	3.9	10453.0	1.3	3046.9	3.7	10891.7	2.0	4846.3	3.2	8660.6	0.8	1734.7	2.2	5295.3
Location 37	3.5	9008.8	1.9	5036.4	3.6	9861.0	1.8	5475.1	3.3	10199.5	2.3	6428.5	2.3	5773.6	1.6	4057.2
Location 38	2.1	4680.8	3.9	10631.0	1.4	3309.4	3.8	11069.7	2.1	5108.9	3.2	8838.6	0.9	1912.8	2.3	5473.3
Location 39	2.3	5979.8	3.2	8821.1	1.9	4888.1	3.0	9259.8	1.7	4271.4	2.5	7028.7	0.4	774.7	1.8	4657.4
Location 40	1.0	2170.7	5.1	13440.8	3.3	8491.3	5.0	13879.5	4.0	10629.5	4.1	11201.3	2.8	7134.4	2.1	5339.4
Location 41	1.4	3716.4	3.7	10354.1	2.2	5080.1	3.5	10792.8	2.5	6914.3	3.0	8561.7	1.2	3030.1	1.2	3086.6
<b>Total</b>	97.6	249719.2	158.8	444727.0	117.9	309972.7	145.6	466897.2	126.2	342749.0	127.5	397132.0	90.1	224406.4	85.7	228454.6
<b>Average</b>	2.4	6090.7	3.9	10847.0	2.9	7560.3	3.6	11387.7	3.1	8359.7	3.1	9686.1	2.2	5473.3	2.1	5572.1



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DESIGN



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